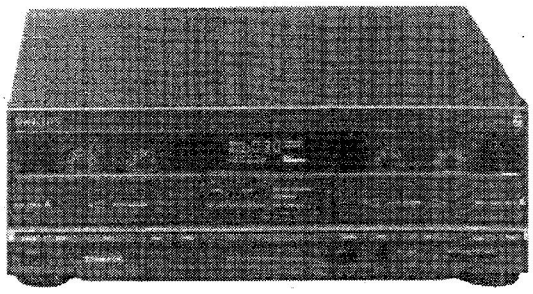
Cassette Deck 70FC330/00G

Service
Service
Service



For repair information of the cassette mechanism see Service Manual "Recorders Tape Decks CRD461/462". + 4338

Power supply from matching amplifier

ServiceManual

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Safety regulations required that the set be restore to its orginal condition and that parts which are identical with those specified be used.

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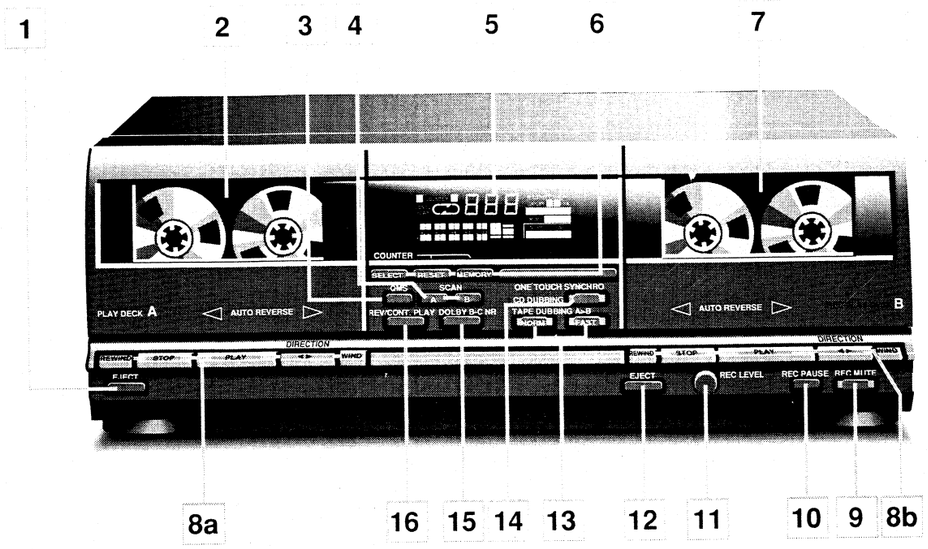
PHILIPS

PHILIPS

CONNECTIONS AND CONTROLS



1 **EJECT** - opening cassette holder 2 of deck A
2 **Cassette holder A** - playback in both directions
3 **QMS** - quick selection of a particular track (QMS = Quick Music Search)
4 **SCAN A** and **B** - automatically playing the beginning of each track (deck A or B)
5 **Display**
6 **COUNTER**
- **SELECT** - selecting the tape counter of deck A *or* B
- **RESET** - returning the counter in the display to 000
- **MEMORY** - storing the counter reading in the memory

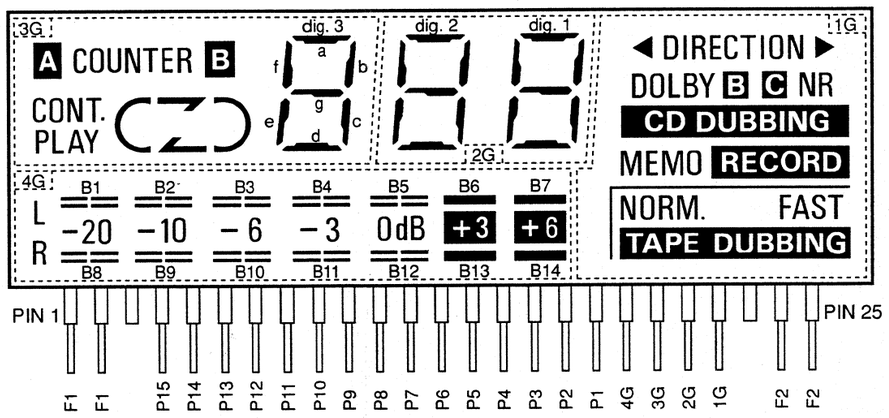
7 **Cassette holder B** - recording and playback in both directions
8 **Keyboard for deck A (a) and deck B (b):**
- **REWIND** - fast winding in the opposite direction in which the tape is travelling
- **STOP** - stopping the tape transport
- **PLAY** - starting playback
- **◄DIRECTION►** - reversing the direction in which the tape is travelling. You can also press the button *during* playback. After switching on the power, the unit always automatically selects ►.
  note: Select ► if the full spool of the cassette is on the left and ◄ if the full spool is on the right.
- **WIND** - fast winding in the tape travel direction

9 **REC**(ording) **MUTE** - starting recording - recording a silent passage
10 **REC**(ording) **PAUSE** - interrupting recording
11 **REC**(ording) **LEVEL** - adjusting the recording volume
12 **EJECT** opening cassette holder 7 of deck B
13 **TAPE DUBBING A > B** selecting the dubbing speed: **NORM**(al) or **FAST**
14 **CD DUBBING** - synchro start of deck B and a CD player when recording from a Compact Disc
15 **DOLBY B-C NR.** - switching on/off the Dolby Noise Reduction system and selecting DOLBY B or C
16 **REV**(erse) / **CONT**(inuous) **PLAY** - selecting the reverse mode: ⇄, ⇄, ⇄ or **CONT**(inuous) **PLAY** ⇄

SPECIFICATION

		Nominal value	Typical value	
Motor		: 12V - DC	: 12V - DC	
Power supply voltage	AF	: 14V - DC	: 14V - DC	
Cassette system		: Compact cassette		
Number of tracks		: 2x2 (stereo)		
Tape speed		: 4.76 cm/sec	: 4.76 cm/sec	
Speed deviation		: ± 2% (DIN)	: ± 1.5%	
Wow and flutter		: 0.3% (DIN)	: 0.15% (DIN); 0.05% (WRMS)	
Fast wind time (C60)		: < 100 sec	: < 100 sec	
Bias and erase frequency		: 85kHz ± 5%	: 85kHz ± 5%	
Frequency range		DIN 45500:	IEC:	NAB:
Metal - type IV		: 40 - 14,000 Hz	: 30 - 16,000 Hz	30 - 17,000 Hz
Chromium - type II		: 40 - 14,000 Hz	: 30 - 16,000 Hz	30 - 17,000 Hz
Normal - type I		: 40 - 13,000 Hz	: 30 - 14,000 Hz	30 - 15,000 Hz
Signal/noise		DIN 45500:	IEC/DIN:	NAB:
Metal		: > 52 dB	: 57 dB	59 dB
Chromium		: > 55 dB	: 57 dB	59 dB
Normal		: > 52 dB	: 56 dB	58 dB
Improvement with Dolby B		: > 8.5 dB (CCIR)	: 10 dB	
Improvement with Dolby C		: > 18 dB (CCIR)	: 20 dB	
Distortion		: < 3%	: < 2%	
Dimensions		: 360 x 120 x 300 mm	: 360 x 120 x 300 mm	

DISPLAY



DISPLAY-TEST

To start the Display Test press the buttons "QMS", "REWIND DECK A" and "REC.PAUSE" beginning with the "QMS" button. Hold all buttons down until the test is started.

During the test, the individual areas of the display - designated 1G - 4G in the figure above - light up in the following sequence: 4G - 3G - 2G - 1G. The areas are illuminated until the test is stopped.

The test can only be stopped by switching the recorder off.

1G - 4G = GRID
F1, F2 = FILAMENT
P1 - P15 = ANODE

ANODE	CONNECTION			
	4G	3G	2G	1G
P1	B1	3a	1a	◁
P2	B2	3b	1b	▷
P3	B3	3c	1c	DOLBY
P4	B4	3d	1d	B
P5	B5	3e	1e	C
P6	B6	3f	1f	NR
P7	B7	3g	1g	CD DUBBING
P8	B8	A	2a	RECORD
P9	B9	COUNTER	2b	
P10	B10	B	2c	NORM.
P11	B11	COUNT.	2d	FAST
P12	B12	PLAY	2e	TAPE DUBBING
P13	B13	(	2f	MEMO
P14	B14	)	2g	
P15	L/R -20 ~ -6	⇄		DIRECTION

SERVICING HINTS

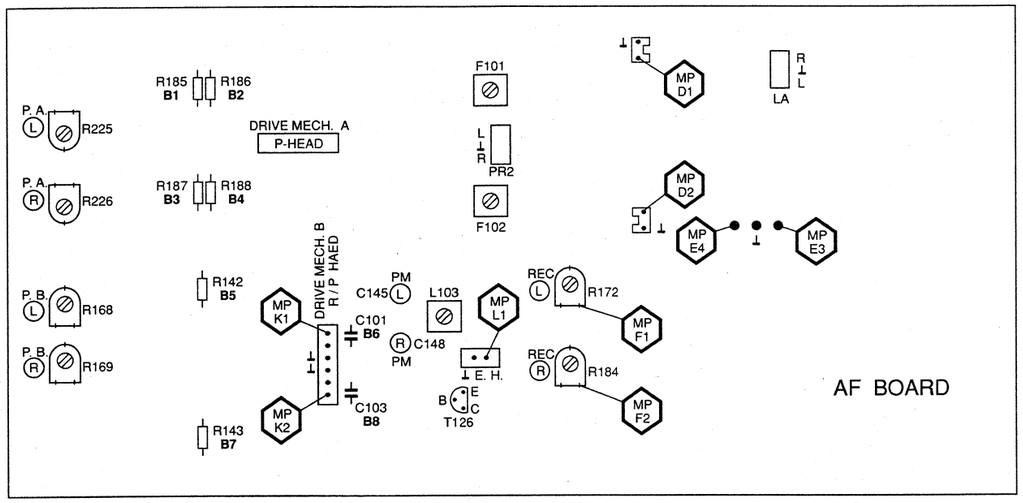
1. ESD

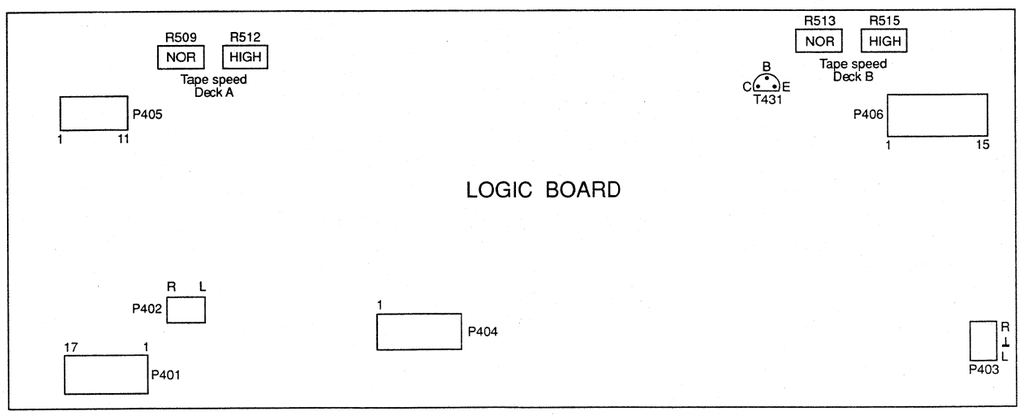
All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential. See Service Information A86 - 1000 for this.

2. DOLBY HINTS

If the product has Dolby noise reduction B and C.
Dolby noise reduction extension manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby", the double-D symbol DD DOLBY B-C NR are trademarks of Dolby Laboratories Licensing Corporation.

ALIGNMENT LAYOUT





ALIGNMENT

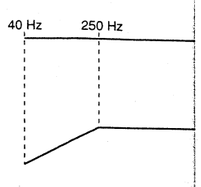
General conditions

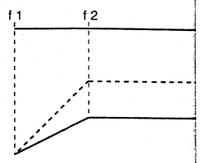
The following general conditions apply to the electrical measurements and adjustments, unless explicity stated otherwise.
- Supply voltage 14V DC.
- Ambient temperature 20 to 25°C.
- Dolby Nr in position off.
- Tape speed in position normal speed.
- Recording level control at maximum.
- The voltage have been measured relative to earth.
- The measurements and adjustments are related to the left-hand channel. The corresponding test points and adjusting elements for the right-hand channel are given in brackets.

Required test equipment and test cassettes

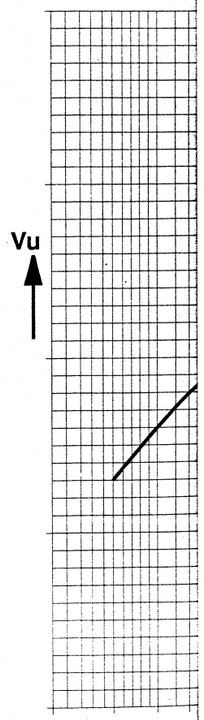
- LF generator
- AC millivoltmeter (mV-meter)
- Frequency counter
- Universal test cassette SBC419Cr-4822 397 30069 (250 nWb/m)

Adjustment	Cassette	Recorder in position	Apply signal to	Measure	Read on	Adjust	Value
Tape speed •b High speed	SBC419 3150Hz	Play (deck A or B)	-	MP-D1 (MP-D2)	Frequency counter	R512 (A-deck)	6300Hz ± 0.2%
						Interconnect basis and emitter of transistor T431	
						R515 (B-deck)	6300Hz ± 0.2%
						Remove the interconnection	
Normal speed •b	SBC419 3150Hz	Play (deck A or B)	-	MP-D1 (MP-D2)	Frequency counter	R509 (A-deck)	3150Hz ± 0.2%
						R513 (B-deck)	3150Hz ± 0.2%
Head azimuth	SBC419 10kHz	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	Head azimuth adjust screw •c	Max. output
Playback sensitivity	SBC419 315Hz - 0 dB	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	R225 (R226) A-deck	308mV
						R168 (R169) B-deck	308mV
Playback frequency response	SBC419 40Hz, to 18kHz	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	-	**A-deck** If V_{out} from the ratio 315Hz to 12.5kHz is > +1 ± 0.5dB open bridges **B1** (R185) / **B2** (R186) left channel or **B3** (R187) / **B4** (R188) right channel **B-deck** If V_{out} from the ratio 315Hz to 12.5kHz is > +1 ± 0.5dB open bridges **B5** (R142) / **B6** (C101) left channel or **B7** (R143) / **B8** (C103) right channel See graph Fig. 1
Target value BIAS	Chromium cassette	Deck B REC	-	MP-K1 (MP-K2)	mV-meter	C145 (C148)	18V (capacitive voltage divider 1:1000)
Recording sensitivity	SBC419 side 2 •d	Deck B REC + PLAY	315Hz, to AUX input FR 330	MP-E3 (MP-E4)	mV-meter	LF-generator	120mV
						Make a recording and play it back	
		Play	-	MP-D1 (MP-D2)	mV-meter	-	120mV •e
BIAS	SBC419 side 2 •d	Deck B REC + PLAY	315Hz, to AUX input FR 330	MP-E3 (MP-E4)	mV-meter	LF-generator	12mV
		Play	-	MP-D1 (MP-D2)	mV-meter	-	Te level V_{out} (315Hz) and V_{out} (12.5kHz) must not differ by more than 0dB ± 0.5dB. If V_{out} (315Hz) to V_{out} (12.5kHz) is greater than 1dB, readjust the **BIAS** with **C145 (C148)**. See graph Fig. 2 •f
f-osc	Arbitrary cassette	Deck B REC	-	MP-L1	Frequency counter	L103	83kHz ± 10kHz
19kHz Suppression	Arbitrary cassette	Deck B REC Dolby on	315Hz, to AUX input FR 330	MP-D1 (MP-D2)	mV-meter	LF-generator	308mV
			19kHz, to AUX input FR 330	MP-D1 (MP-D2)	mV-meter	F101 (F102)	<12mV





	f 1
Metal	40 Hz
Cr	40 Hz
Normal	40 Hz



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Normal speed •b	SBC419 3150Hz	Play (deck A or B)	-	MP-D1 (MP-D2)	Frequency counter	R509 (A-deck)	3150Hz ± 0.2%
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Head azimuth	SBC419 10kHz	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	Head azimuth adjust screw •c	Max. output
Playback sensitivity	SBC419 315Hz - 0 dB	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	R225 (R226) A-deck	308mV
						R168 (R169) B-deck	308mV
Playback frequency response	SBC419 40Hz, to 18kHz	Play (deck A or B)	-	MP-D1 (MP-D2)	mV-meter	-	**A-deck** If V_{out} from the ratio 315Hz to 12.5kHz is > +1 ± 0.5dB open bridges **B1** (R185) / **B2** (R186) left channel or **B3** (R187) / **B4** (R188) right channel **B-deck** If V_{out} from the ratio 315Hz to 12.5kHz is > +1 ± 0.5dB open bridges **B5** (R142) / **B6** (C101) left channel or **B7** (R143) / **B8** (C103) right channel See graph Fig. 1
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Recording sensitivity	SBC419 side 2 •d	Deck B REC + PLAY	315Hz, to AUX input FR 330	MP-E3 (MP-E4)	mV-meter	LF-generator	120mV
				Make a recording and play it back			
		Play	-	MP-D1 (MP-D2)	mV-meter	-	120mV •e
BIAS	SBC419 side 2 •d	Deck B REC + PLAY	315Hz, to AUX input FR 330	MP-E3 (MP-E4)	mV-meter	LF-generator	12mV
		Play	-	MP-D1 (MP-D2)	mV-meter	-	Te level V_{out} (315Hz) and V_{out} (12.5kHz) must not differ by more than 0dB ± 0.5dB. If V_{out} (315Hz) to V_{out} (12.5kHz) is greater than 1dB, readjust the **BIAS** with **C145 (C148)**. See graph Fig. 2 •f
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19kHz Suppression	Arbitrary cassette	Deck B REC Dolby on	315Hz, to AUX input FR 330	MP-D1 (MP-D2)	mV-meter	LF-generator	308mV
			19kHz, to AUX input FR 330	MP-D1 (MP-D2)	mV-meter	F101 (F102)	<12mV

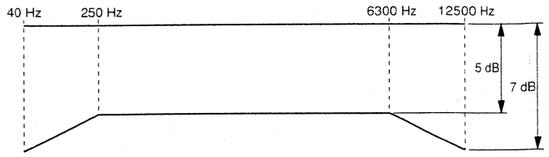
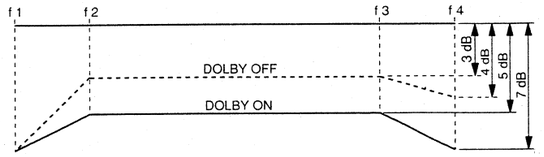


Fig. 1



	f 1	f 2	f 3	f 4
Metal	40 Hz	125 Hz	8 kHz	14 kHz
Cr	40 Hz	125 Hz	8 kHz	14 kHz
Normal	40 Hz	125 Hz	8 kHz	13 kHz

Fig. 2

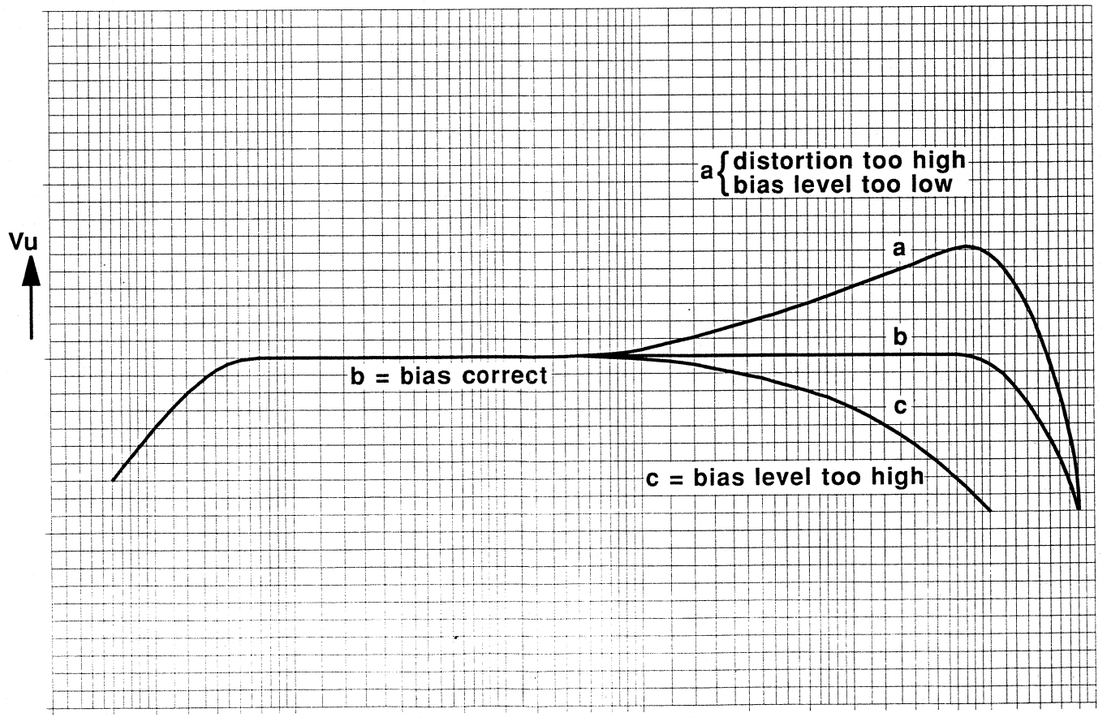


Fig. 1

Notes:

•a. Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleaned.

•b. It is important that first the high speed is adjusted and hereafter the normal speed. The difference of speed between deck A and B may be 1% at the utmost, both for normal speed and high speed.

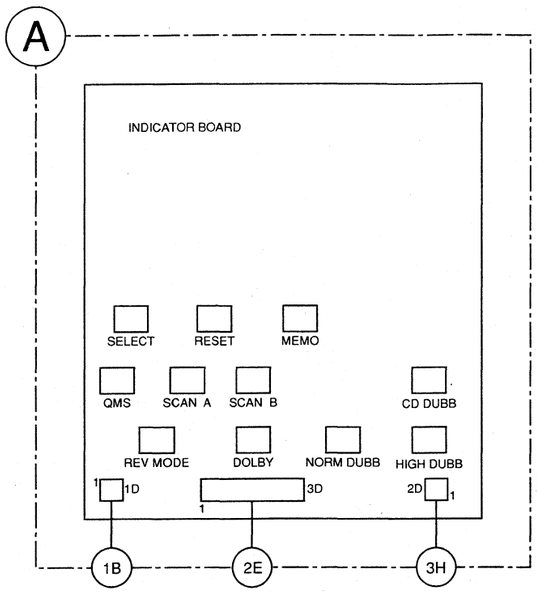
•c. Head azimuth
To carry out this alignment the PLAY-BUTTON must be removed. Direction of tape-threading to the right (FWD-PLAY) left-hand screw. Direction of tape-threading to the left (REV-PLAY) righthand screw. When the output levels of the right and left channel are different, set the channel with the lowest value to maximum. Use the same tape and tape section for the deck A and the deck B.

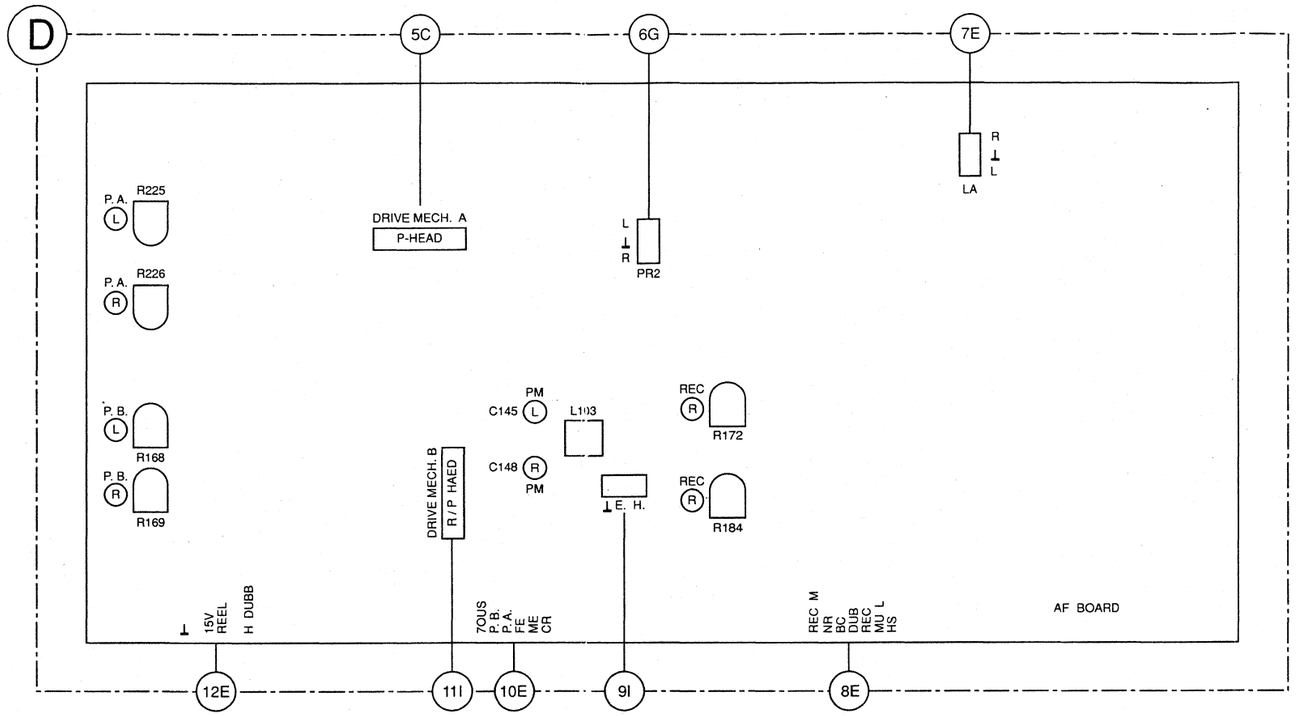
•d. If the accuracy requirements are less stringent a high quality chromium cassette may be used as an alternative.

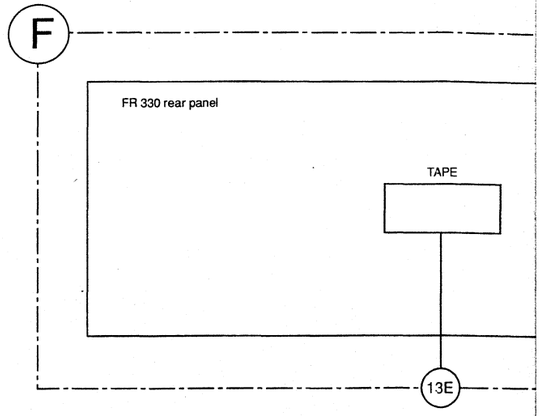
•e. The output voltage on MP-D1 (MP-D2) should read 120mV ± 5mV.
If this is not the case reduce the LF-signal (bias disabled) by as many dB`s as the reading was too low or too high by means of R172 (R184).

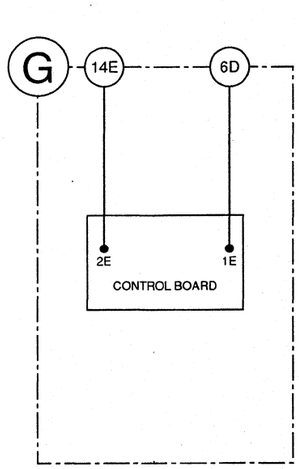
•f. When one channel is adjusted this may slightly affect the adjustment of the other channel.
If the adjustment is correct the frequency response curve will be similar to curve b in Fig. 3 distortion < 2%.

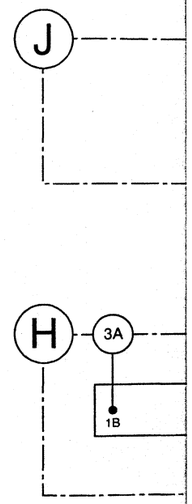
WIRING DIAGRAM

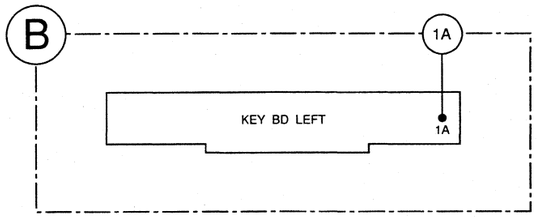


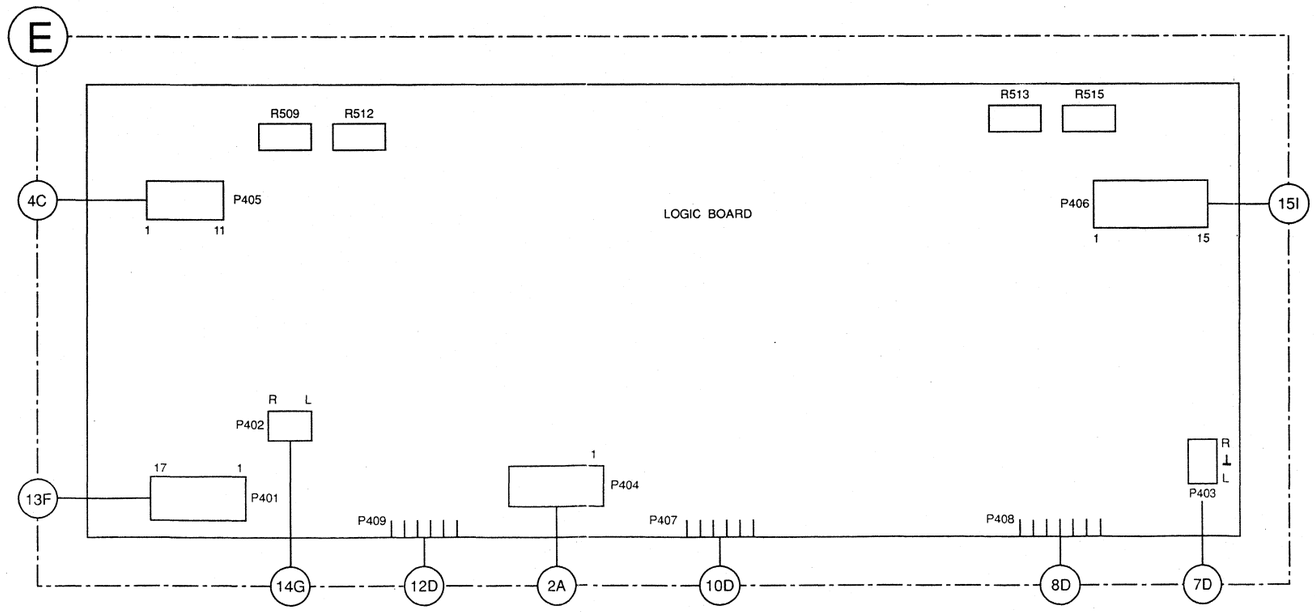


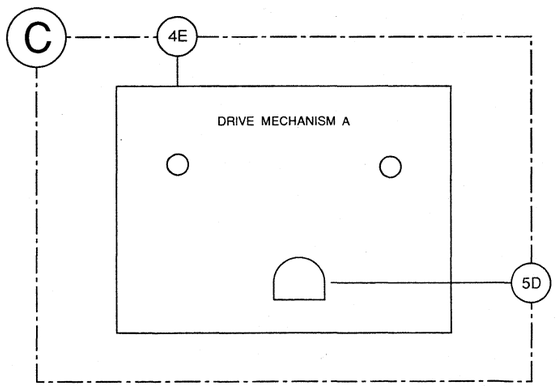


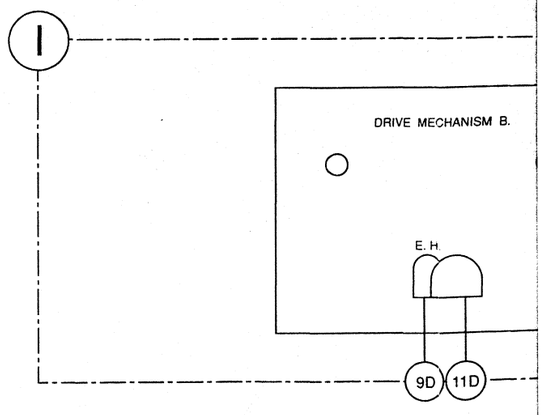


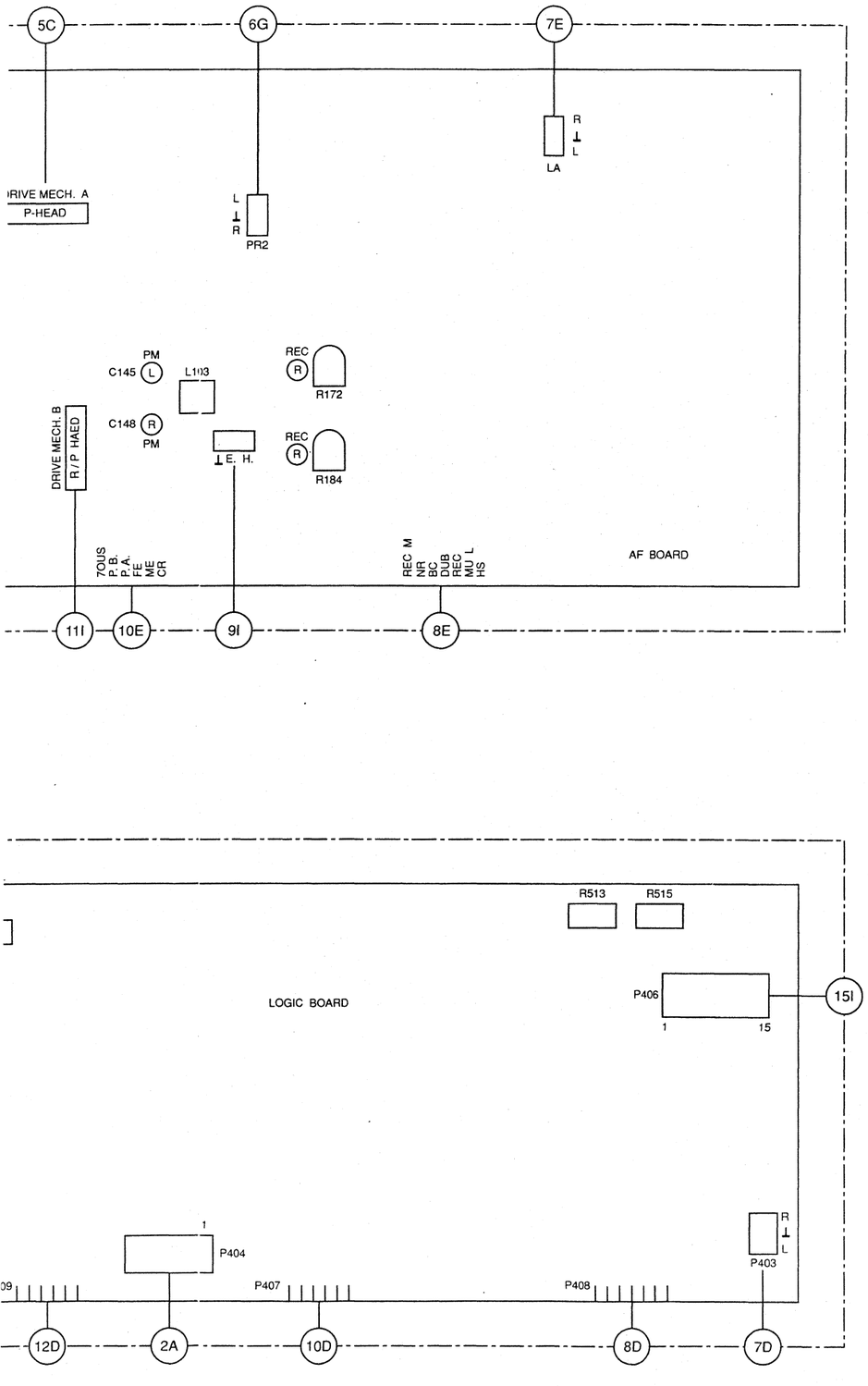


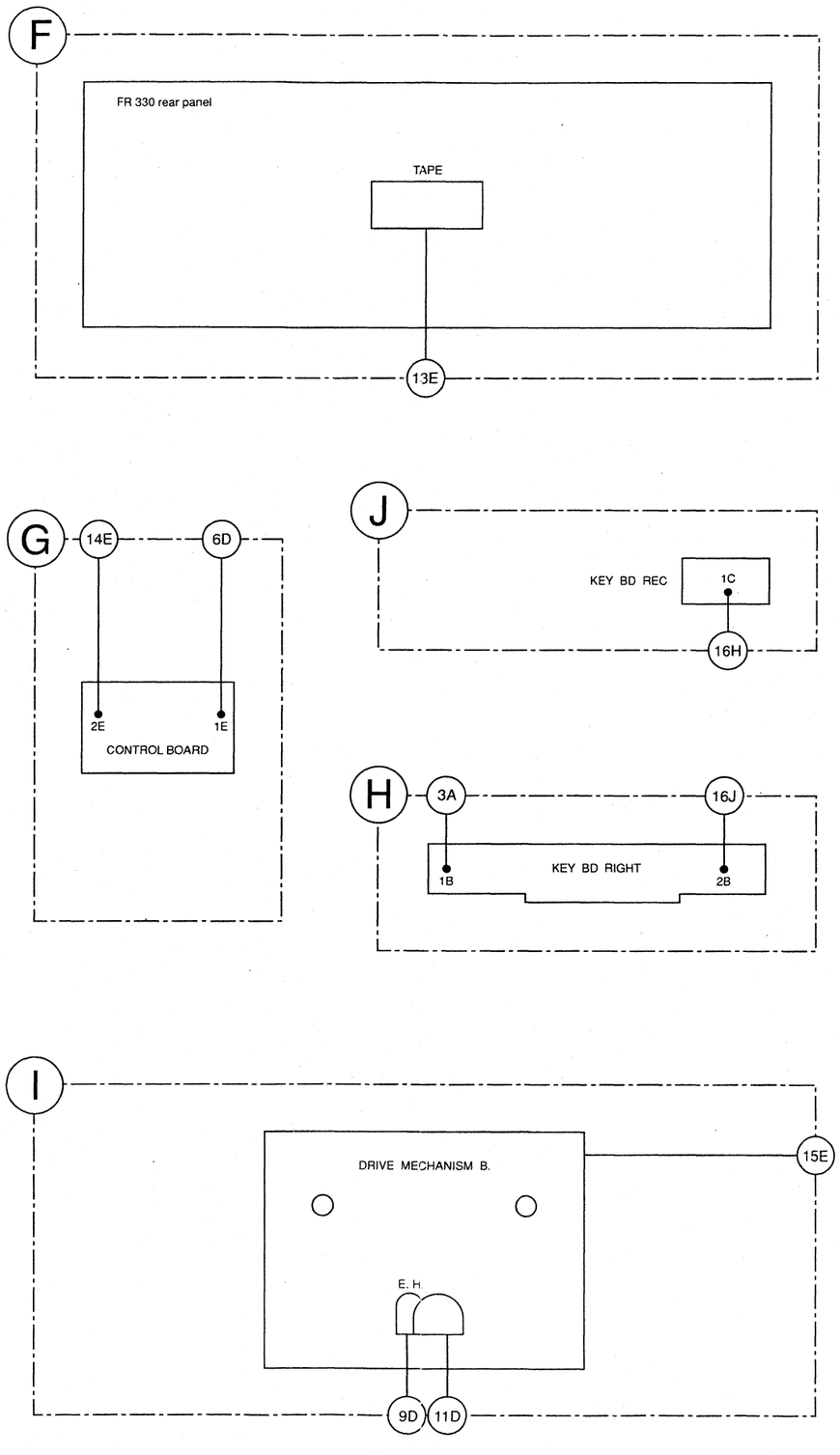












STANDARD SYMBOLS / COMPONENTS

ATTENTION!
OBSERVE MOS COMPONENTS HANDLING INSTRUCTIONS WHEN SERVICING!

⚠ ABSOLUTELY NECESSARY FOR THE SAFETY OF THE SET. THESE COMPONENTS MEET THE SAFETY REQUIREMENTS ACCORDING TO VDE OR IEC. RESP. AND MUST BE REPLACED BY PARTS OF SAME SPECIFICATION ONLY.

⬡ MEASUREMENT POINT

○ ALIGNMENT POINT

RESISTOR

- KSW 0204 DIN
- MSW 0204 DIN
- KSW 0207 DIN
- MSW 0207 DIN
- KSW 0309 DIN
  KSW 0411 DIN
- KSW 0617 DIN
- MSW 0309 DIN
- NTC
- MSW 0414 DIN
- WIRE
- METAL OXYDE
- LOW NOISE
- LOW FLAMMABILITY
- SAFETY RESISTOR

CAPACITOR

- ELECTROLYTIC
- TANTALIUM ELECTROLYTIC
- FOIL
- CERAMIC
- MULTILAYER
- POLYPROPYLEN (KS-KP)

BC327
BC337
BC338
BC548
BC550
BC557
BC558
C B E

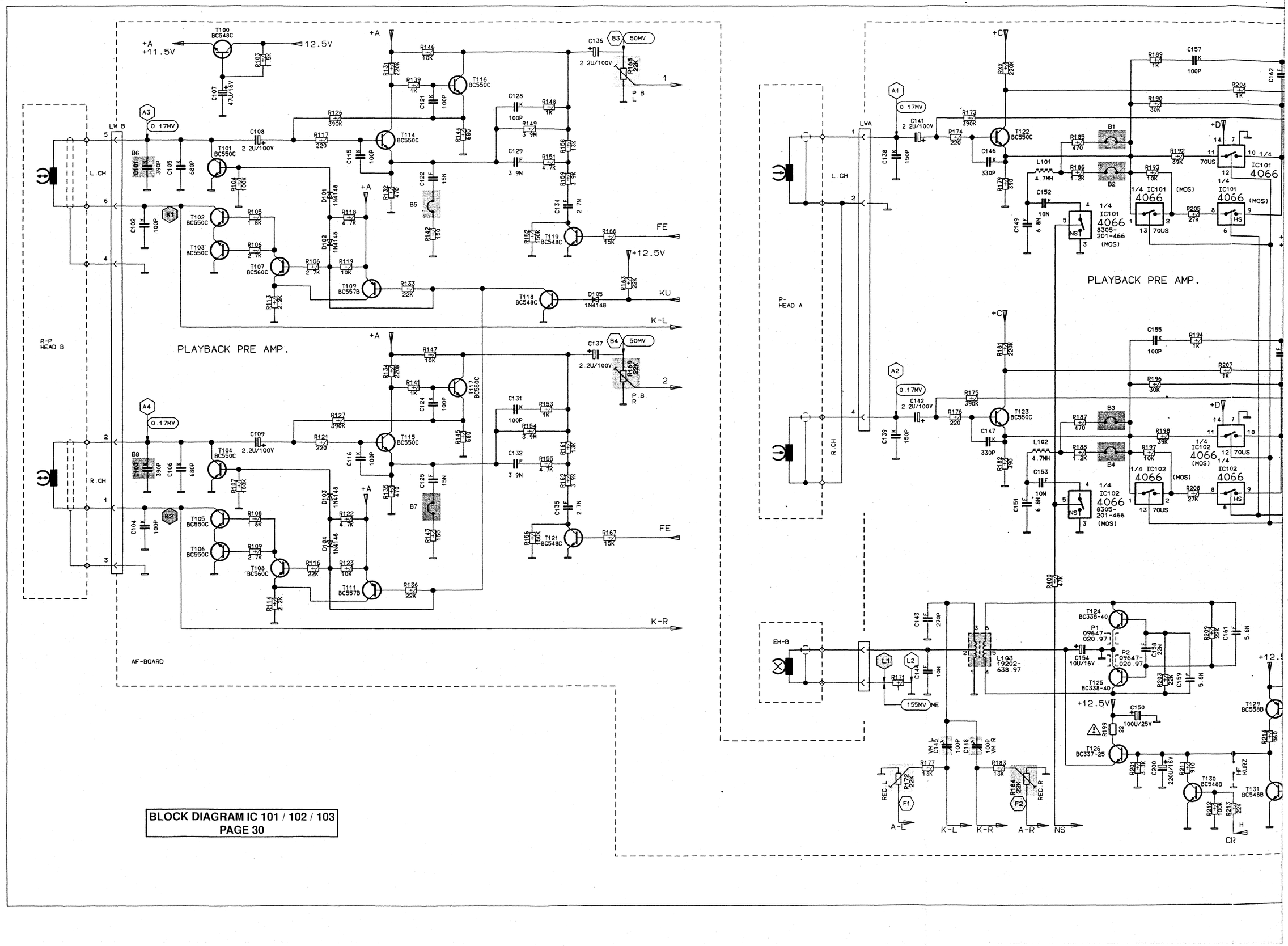
E C B
BC636

1
4066
COP50727
COP470N
CX20187
LM339N
MOS

TOP VIEW

IF NOT OTHERWISE INDICATED ALL VOLTAGES ARE MEASURED AGAINST CHASSIS WITH A VOLTMETER (RI=10M). THE VALUES ARE VALID FOR 220V AC MAINS VOLTAGES.

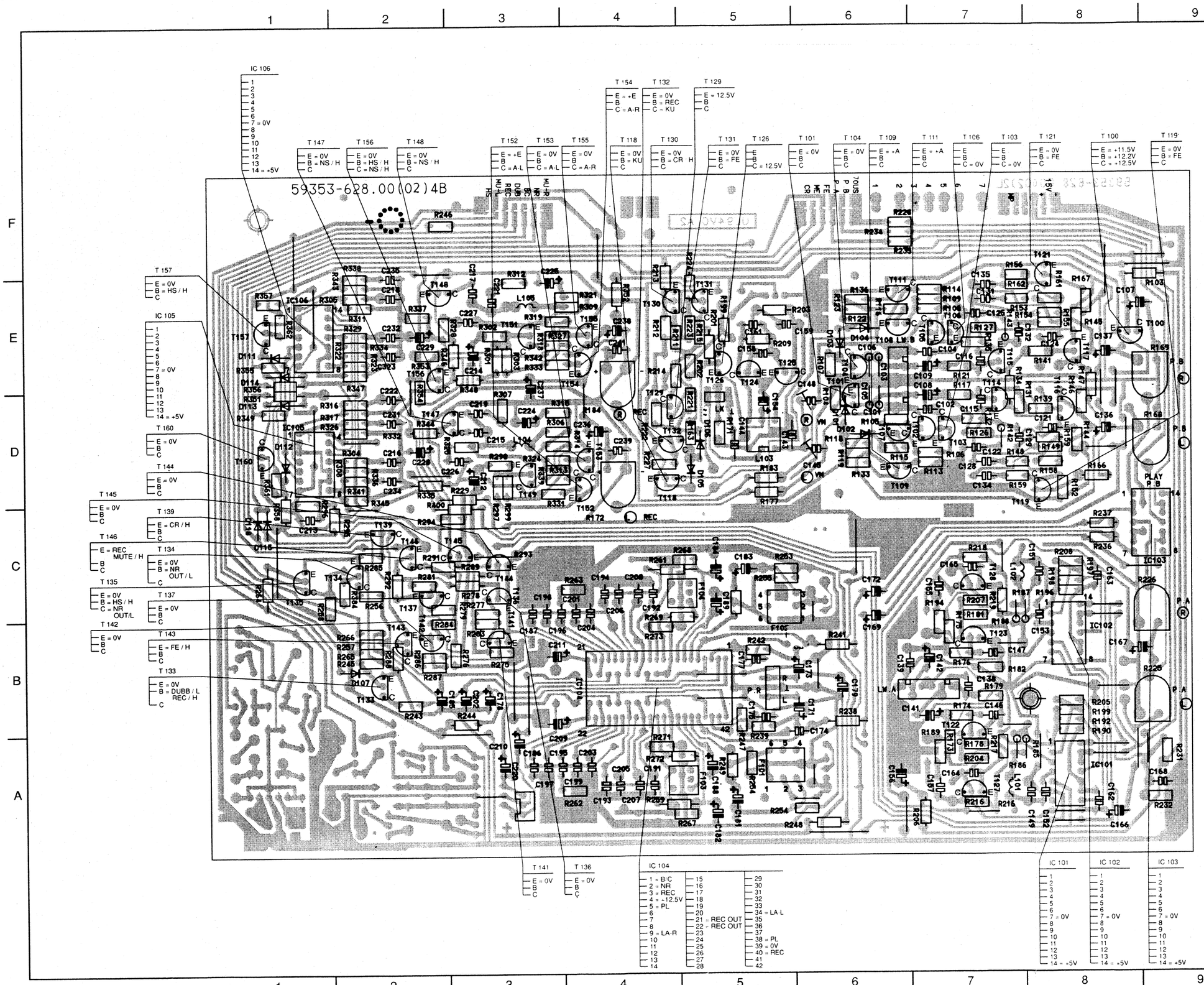
AF CIRCUIT DIAGRAM 1



PLAYBACK PRE AMP.

FC330

AF PANEL



AK	A2	C 228	D2	R 182	B7	R 318	E3								
LK	D5	C 229	E2	R 183	D5	R 319	E3								
LW A	B7	C 231	D2	R 184	E4	R 321	E4								
LW B	E6	C 232	E2	R 185	A8	R 322	E2								
MP D1	A4	C 234	D2	R 186	A7	R 323	E2								
MP D2	C4	C 235	E2	R 187	C8	R 324	D4								
P.R	B5	C 236	D4	R 188	C7	R 325	D3								
PR	B1	C 237	E3	R 189	A7	R 326	D2								
C 101	D6	C 238	E4	R 190	B8	R 327	E3								
C 102	D7	C 239	D4	R 191	A7	R 328	E3								
C 103	E6	C 241	E4	R 192	B8	R 329	E2								
C 104	E7	C 242	A3	R 194	B7	R 331	D3								
C 105	D6	C 243	A3	R 195	B7	R 332	D2								
C 106	E6	C 323	E2	R 196	C8	R 333	E3								
C 107	E6	C 381	A5	R 197	C8	R 334	E2								
C 108	D7	C 382	C5	R 198	C8	R 335	D2								
C 109	E7	C 388	C6	R 199	B8	R 336	D2								
C 111	A1	C 389	C6	R 200	E5	R 337	E2								
C 112	A1	D 100	B8	R 201	E5	R 338	E2								
C 113	A1	D 101	D6	R 202	E5	R 339	D4								
C 114	A1	D 102	D6	R 203	E5	R 341	D2								
C 115	D7	D 103	E6	R 204	A7	R 342	E3								
C 116	E7	D 104	E6	R 205	B8	R 343	E2								
C 117	B1	D 105	D5	R 206	A7	R 344	D2								
C 118	B1	D 106	D5	R 207	C7	R 345	D2								
C 121	D8	D 107	B2	R 208	C8	R 346	E3								
C 122	D7	D 108	B2	R 209	C8	R 347	D2								
C 124	E8	D 109	F4	R 211	E5	R 348	E3								
C 125	E7	D 110	B9	R 212	E4	R 349	D1								
C 126	B1	D 111	E1	R 213	E4	R 351	D1								
C 127	B1	D 112	D1	R 214	E5	R 352	E2								
C 128	D7	D 113	D1	R 215	E5	R 353	E2								
C 129	D7	D 114	E1	R 216	A7	R 354	E2								
C 131	E7	D 115	C1	R 217	A7	R 355	E1								
C 132	E7	D 116	C1	R 218	C7	R 356	E1								
C 133	B1	D 120	D9	R 219	C7	R 357	E2								
C 134	D7	D 130	E9	R 221	D5	R 358	C1								
C 135	D8	F 101	A5	R 222	D4	R 361	D1								
C 136	D8	F 102	C5	R 223	E5	R 362	E1								
C 137	E8	F 103	A5	R 224	E5	R 363	A3								
C 138	B7	F 104	A5	R 225	B9	R 364	A3								
C 139	B7	IC 101	A8	R 226	C9	R 365	A3								
C 141	B7	IC 102	B8	R 227	D4	R 366	A3								
C 142	B7	IC 103	C9	R 228	E6	R 367	A2								
C 143	D6	IC 104	B4	R 229	D3	R 368	A2								
C 144	D5	IC 105	D1	R 231	A9	R 369	A2								
C 145	D6	IC 106	E1	R 232	A9	R 371	A2								
C 146	B7	L 101	A7	R 234	F6	R 372	A2								
C 147	B7	L 102	C7	R 235	F6	R 373	A2								
C 148	D6	L 103	D5	R 236	C8	R 374	A2								
C 149	A8	L 104	D3	R 237	C8	R 375	A5								
C 151	C8	L 105	E3	R 238	B6	R 381	A5								
C 152	A8	R 101	A1	R 239	B5	R 382	B5								
C 153	C8	R 102	A1	R 241	B6	R 384	D2								
C 154	D5	R 103	E9	R 242	B5	R 388	A6								
C 155	C7	R 104	D6	R 243	B2	R 389	C6								
C 156	A6	R 105	D6	R 244	B3	R 391	A6								
C 157	A7	R 106	D7	R 245	B2	R 392	C6								
C 158	E5	R 107	E6	R 246	F3	R 400	C3								
C 159	E5	R 108	E7	R 247	B5	T 100	E8								
C 161	E5	R 109	E7	R 248	A6	T 101	D6								
C 162	A8	R 111	A1	R 249	A5	T 102	D7								
C 163	C8	R 112	A1	R 253	C5	T 103	D7								
C 164	A7	R 113	D7	R 254	A5	T 104	E6								
C 165	C7	R 114	E7	R 254	A6	T 105	E7								
C 166	A8	R 115	D6	R 255	C5	T 106	D6								
C 167	B9	R 116	E6	R 256	C2	T 107	D6								
C 168	A9	R 117	D7	R 257	B2	T 108	E8								
C 169	C6	R 118	D6	R 258	C2	T 109	E6								
C 171	B6	R 119	D6	R 259	A5	T 111	E6								
C 172	C6	R 121	E7	R 261	C4	T 112	B1								
C 173	B6	R 122	E6	R 262	A4	T 113	B7								
C 174	B6	R 123	E6	R 263	C4	T 114	B7								
C 175	B5	R 124	A1	R 264	C1	T 115	D7								
C 176	B6	R 125	B1	R 265	B2	T 116	D8								
C 177	B5	R 126	D7	R 266	B2	T 117	E8								
C 178	B6	R 127	A6	R 267	A5	T 118	B4								
C 179	B6	R 128	B1	R 268	C5	T 119	D8								
C 181	A5	R 129	B1	R 269	C5	T 121	E8								
C 182	A5	R 131	D7	R 271	A4	T 122	B7								
C 183	C5	R 132	D7	R 272	A5	T 123	E5								
C 185	B2	R 133	B4	R 273	B4	T 124	E5								
C 186	A3	R 134	D7	R 274	E5	T 125	B5								
C 187	C3	R 135	E7	R 275	B3	T 126	A7								
C 188	A5	R 136	E6	R 276	B3	T 127	C7								
C 189	C5	R 137	B1	R 277	C3	T 128	D7								
C 191	A4	R 138	B1	R 278	C3	T 129	D4								
C 192	C4	R 139	D8	R 281	C2	T 130	E4								
C 193	A4	R 141	E8	R 282	E5	T 131	E5								
C 194	C4	R 142	E7	R 283	A4	T 132	B2								
C 195	A4	R 143	E7	R 283	B3	T 133	B2								
C 196	C4	R 144	D8	R 284	B2	T 134	C2								
C 197	A3	R 145	E8	R 285	C2	T 135	C1								
C 198	C3	R 146	D8	R 286	B2	T 136	C2								
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C 201	C4	R 148	D7	R 288	B2	T 138	E5								
C 202	B3	R 149	D8	R 289	C3	T 139	C2								
C 203	A4	R 152	D8	R 291	C2	T 141	B3								
C 204	A4	R 153	E7	R 292	C2	T 142	B2								
C 205	A4	R 154	E8	R 293	C3	T 143	C3								
C 206	C4	R 155	E8	R 294	C3	T 144	C3								
C 207	A4	R 156	E7	R 295	C2	T 145	C3								
C 208	C4	R 157	B1	R 295	D1	T 146	C2								
C 209	B3	R 158	D7	R 297	D3	T 147	E2								
C 210	A3	R 159	D8	R 298	D3	T 148	D3								
C 211	B3	R 161	E8	R 299	D3	T 149	D3								
C 212	D3	R 162	E7	R 301	D3	T 151	E3								
C 213	D1	R 163	D5	R 302	E3	T 152	D4								
C 214	E3	R 166	D8	R 303	E3	T 153	D5								
C 215	D3	R 167	E8	R 304	D2	T 154	E4								
C 216	D2	R 168	D9	R 305	E2	T 155	E4								
C 217	E3	R 169	E9	R 306	D4	T 156	E2								
C 218	E2	R 171	D5	R 307	D3	T 157	E1								
C 219	D3	R 172	D4	R 308	D2	T 158	A3								
C 220	A3	R 173	A7	R 309	E4	T 159	A3								
C 221	E3	R 174	B7	R 311	E2	T 160	D1								
C 222	D2	R 175	B7	R 312	E3	T 161	B2								
C 224	D3	R 176	B7	R 313	D4	T 162	A2								
C 225	E3	R 177	D5	R 314	D4	T 163	A2								
C 226	D3	R 178	A7	R 315	D4	T 164	A2								
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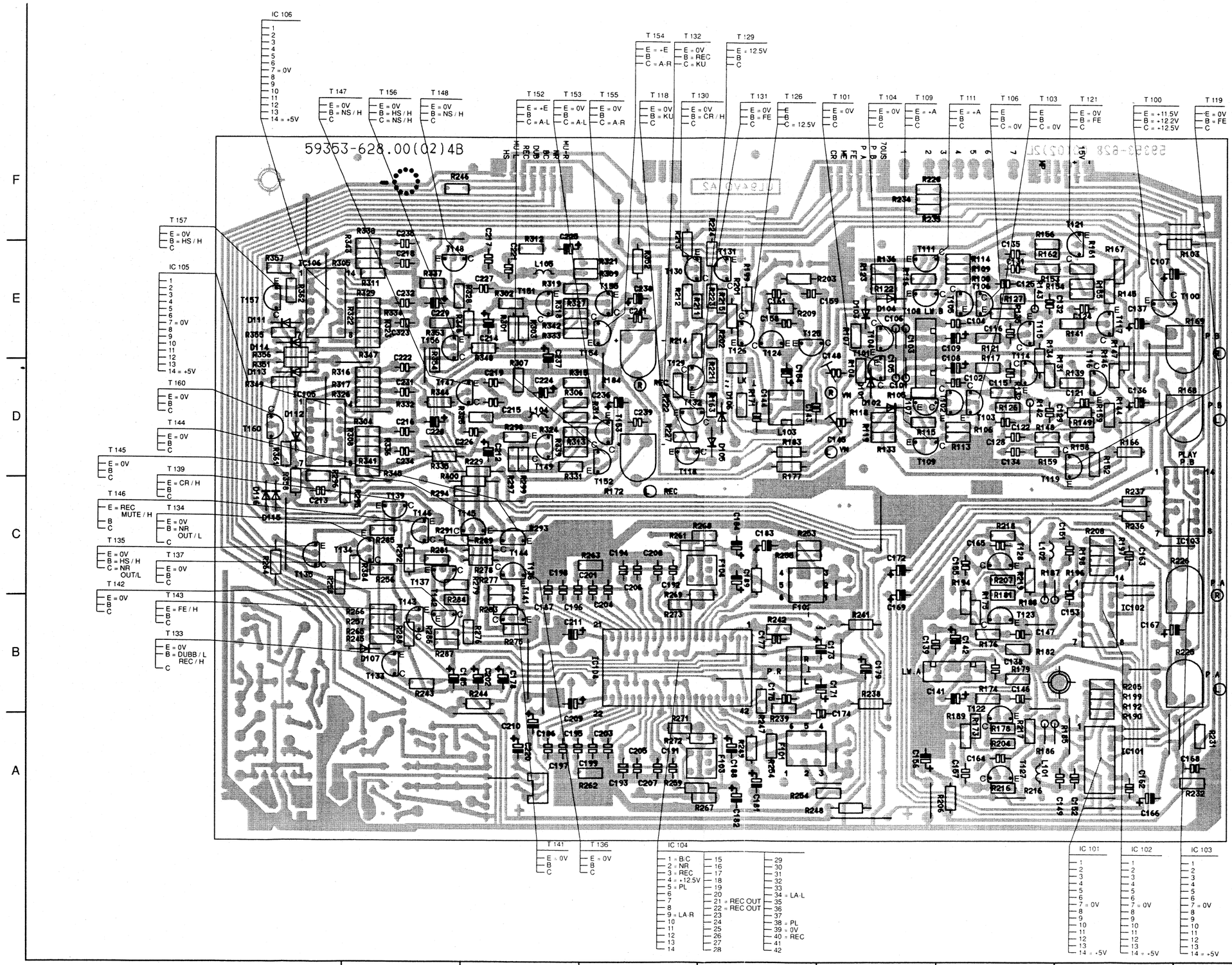
		R 181	C7	R 317	D2	T 382	C6								

CS 33005



AK	A2	C 228	D2	R 182	B7	R 318	E3
LK	D5	C 229	E2	R 183	D5	R 319	E3
LW.A	B7	C 231	D2	R 184	E4	R 321	E4
LW.B	E6	C 232	E2	R 185	A8	R 322	E2
MP D1	A4	C 234	D2	R 186	A7	R 323	E2
MP D2	C4	C 235	E2	R 187	C8	R 324	D4
P.R	B5	C 236	D4	R 188	C7	R 325	D3
PR	B1	C 237	E3	R 189	A7	R 326	D2
C 101	D6	C 238	E4	R 190	B8	R 327	E3
C 102	D7	C 239	D4	R 191	A7	R 328	E3
C 103	E6	C 241	E4	R 192	B8	R 329	E2
C 104	E7	C 242	A3	R 194	B7	R 331	D3
C 105	D6	C 243	A3	R 195	B7	R 332	D2
C 106	E6	C 323	E2	R 196	C8	R 333	E3
C 107	E9	C 381	A5	R 197	C8	R 334	E2
C 108	D7	C 382	C5	R 198	C8	R 335	D2
C 109	E7	C 388	A6	R 199	B8	R 336	D2
C 111	A1	C 389	G6	R 199	E5	R 337	E2
C 112	A1	D 100	B8	R 201	E5	R 338	E2
C 113	A1	D 101	D6	R 202	E5	R 339	D4
C 114	A1	D 102	D6	R 203	E5	R 341	D2
C 115	D7	D 103	E6	R 204	A7	R 342	E3
C 116	E7	D 104	E6	R 205	B8	R 343	E2
C 117	B1	D 105	D5	R 206	A7	R 344	D2
C 118	B1	D 106	D5	R 207	C7	R 345	D2
C 121	D8	D 107	B2	R 208	C8	R 346	E3
C 122	D8	D 108	E5	R 209	E5	R 347	E2
C 124	E8	D 109	F4	R 211	E5	R 348	E2
C 125	E7	D 110	B9	R 212	E4	R 349	D1
C 126	B1	D 111	E1	R 213	E4	R 351	D1
C 127	B1	D 112	D1	R 214	E5	R 352	E4
C 128	D7	D 113	D1	R 215	E5	R 353	E2
C 129	D7	D 114	E1	R 216	A7	R 354	E2
C 131	E7	D 115	C1	R 217	A7	R 355	E1
C 132	E7	D 116	C1	R 218	C7	R 356	E1
C 133	B1	D 120	D9	R 219	C7	R 357	E1
C 134	D7	D 130	E9	R 221	D5	R 358	C1
C 135	E7	F 101	A5	R 222	D4	R 361	D1
C 136	D8	F 102	C5	R 223	E5	R 362	E1
C 137	E8	F 103	A5	R 224	E5	R 363	A3
C 138	B7	F 104	C5	R 225	B9	R 364	A3
C 139	B7	IC 101	A8	R 226	C9	R 365	A3
C 141	B7	IC 102	B8	R 227	D4	R 366	A3
C 142	B7	IC 103	G9	R 228	F6	R 367	A2
C 143	D6	IC 104	B4	R 229	C3	R 368	A2
C 144	D5	IC 105	D1	R 231	A9	R 369	A2
C 145	D6	IC 106	E1	R 232	A9	R 371	A2
C 146	B7	L 101	A7	R 234	F6	R 372	A2
C 147	B7	L 102	C7	R 235	F6	R 373	A2
C 148	D6	L 103	D5	R 236	C8	R 374	A2
C 149	A8	L 104	D3	R 237	C8	R 375	A2
C 151	C8	L 105	E3	R 238	B6	R 381	A5
C 152	A8	R 101	A1	R 239	B5	R 382	B5
C 153	C8	R 102	A1	R 240	B5	R 384	C2
C 154	D5	R 103	E9	R 242	B5	R 388	A6
C 155	C7	R 104	D6	R 243	B2	R 389	C6
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C 158	E5	R 107	E6	R 246	F3	R 400	C3
C 159	E5	R 108	E7	R 247	B5	T 100	E8
C 161	E5	R 109	E7	R 248	A6	T 101	D6
C 162	A8	R 111	A1	R 249	A5	T 102	D7
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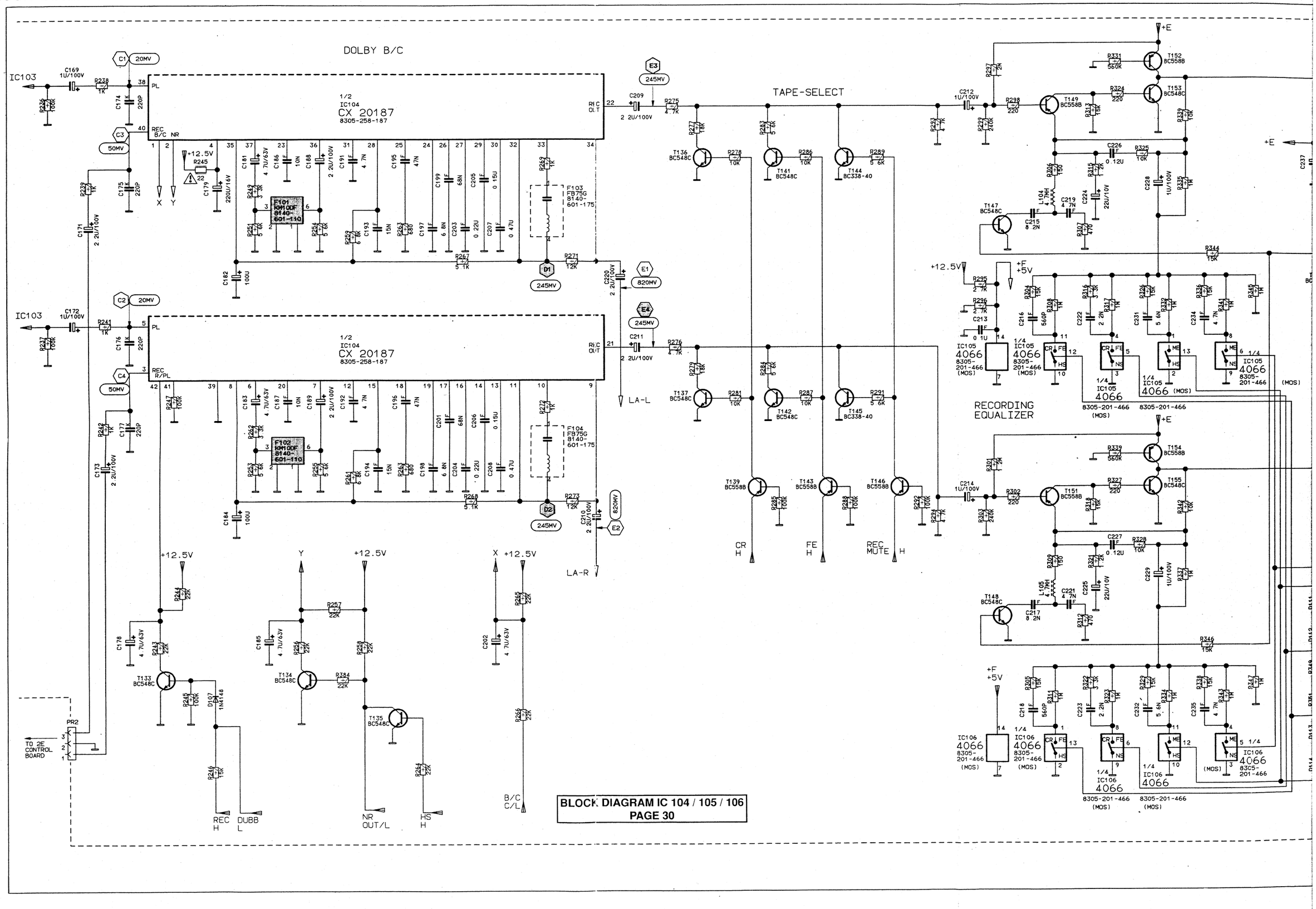
C 167	B9	R 116	D6	R 256	C2	T 107	D6
C 168	A9	R 117	D7	R 257	B2	T 108	E6
C 169	C6	R 118	D6	R 258	C2	T 109	D6
C 171	B6	R 119	D6	R 259	A5	T 111	E6
C 172	C6	R 121	E7	R 261	C4	T 112	B1
C 173	B6	R 122	E6	R 262	A4	T 113	B1
C 174	B6	R 123	E6	R 263	C4	T 114	D7
C 175	B5	R 124	A1	R 264	C1	T 115	E7
C 176	B6	R 125	B1	R 265	B2	T 116	D8
C 177	B5	R 126	D7	R 266	B2	T 117	E8
C 178	B3	R 127	E7	R 267	A5	T 118	D4
C 179	B6	R 128	B1	R 268	C5	T 119	D8
C 181	A5	R 129	B1	R 269	C5	T 121	E8
C 182	A5	R 131	D7	R 271	A4	T 122	B7
C 183	C5	R 132	D7	R 272	A5	T 123	B7
C 184	C5	R 133	D6	R 273	B4	T 124	E5
C 185	B2	R 134	D7	R 274	E5	T 125	E5
C 186	A3	R 135	E7	R 275	B3	T 126	E5
C 187	C3	R 136	E6	R 276	B3	T 127	A7
C 188	A5	R 137	B1	R 277	C3	T 128	C7
C 189	C5	R 138	B1	R 278	C3	T 129	D4
C 191	A4	R 139	D8	R 279	C3	T 130	E4
C 192	C4	R 141	B8	R 281	C2	T 131	E5
C 193	A4	R 142	D7	R 282	E5	T 132	D4
C 194	C4	R 143	E7	R 283	A4	T 133	B2
C 195	A4	R 144	D8	R 283	B3	T 134	C2
C 196	C4	R 145	E8	R 284	B2	T 135	C1
C 197	A3	R 146	D8	R 285	C2	T 136	C3
C 198	C3	R 147	D8	R 286	B2	T 137	C2
C 199	A4	R 148	D7	R 287	B2	T 138	E5
C 201	C4	R 149	D8	R 288	B2	T 139	C2
C 202	B3	R 151	D8	R 289	C3	T 141	C3
C 203	A4	R 153	E7	R 291	C2	T 142	B2
C 204	C4	R 154	E8	R 292	C2	T 143	B2
C 205	A4	R 155	E8	R 293	C3	T 144	C3
C 206	C4	R 156	E7	R 294	C3	T 145	C3
C 207	A4	R 157	B1	R 295	C2	T 146	C3
C 208	C4	R 158	D8	R 296	D1	T 147	D3
C 209	B3	R 159	D7	R 297	D3	T 148	E2
C 210	A3	R 159	D8	R 298	D3	T 149	D3
C 211	B3	R 161	D8	R 299	D3	T 151	B3
C 212	D3	R 162	E7	R 301	E3	T 152	D4
C 213	C1	R 163	D5	R 302	E3	T 153	D4
C 214	E3	R 166	D8	R 303	E3	T 154	E4
C 215	D3	R 167	E8	R 304	D2	T 155	E4
C 216	D2	R 168	D9	R 305	E2	T 156	E2
C 217	E3	R 169	E9	R 306	D4	T 157	E1
C 218	E2	R 171	D5	R 307	D3	T 158	A3
C 219	D3	R 172	D4	R 308	D2	T 159	A3
C 220	A3	R 173	A7	R 309	E4	T 160	D1
C 221	E3	R 174	B7	R 311	E2	T 161	B2
C 222	D2	R 175	B7	R 312	E3	T 162	A2
C 224	D3	R 176	B7	R 313	D4	T 163	A2
C 225	E3	R 177	D5	R 314	D4	T 164	A2
C 226	D3	R 178	A7	R 315	D4	T 381	A6
C 227	E3	R 179	B7	R 316	D2	T 382	C6
		R 181	C7	R 317	D2		

AF CIRCUIT DIAGRAM 2



TAPE-SELECT

RECORDING EQUALIZER

LA-L

LA-R

A-L

A-R

+E

+12.5V

+F
+5V

NS

HS

ME

CR

FE

REC MUTE

B/C
C/L

X +12.5V

P403
TO LOGIC-BOARD

P409
TO LOGIC-BOARD

P407
TO LOGIC-BOARD

P408
TO LOGIC-BOARD

REEL

H-DUBB

70US

P-B

P-A

FE

ME

CR

REC/MUTE

NR

B/C

DUBB

REC

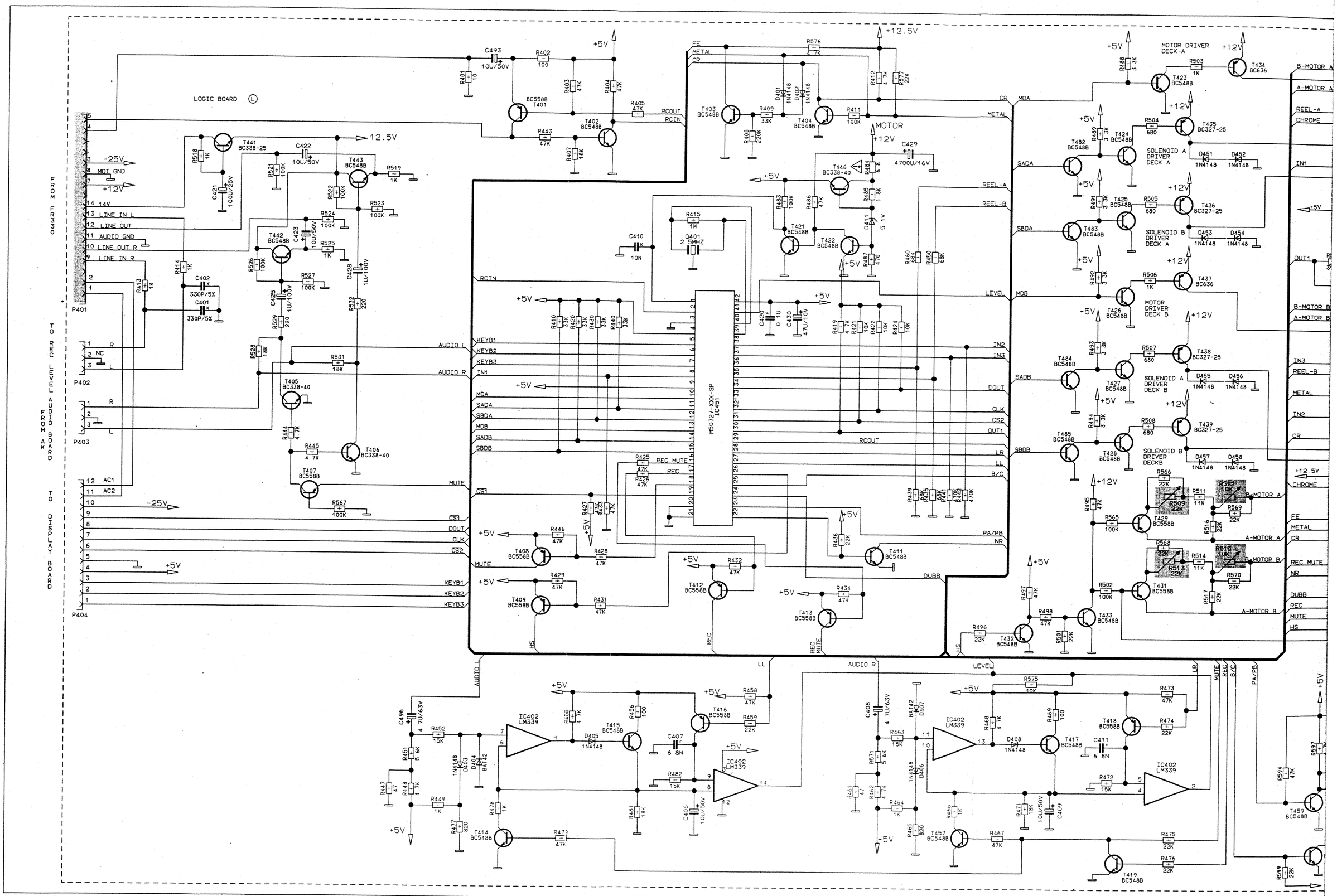
MU L

HS

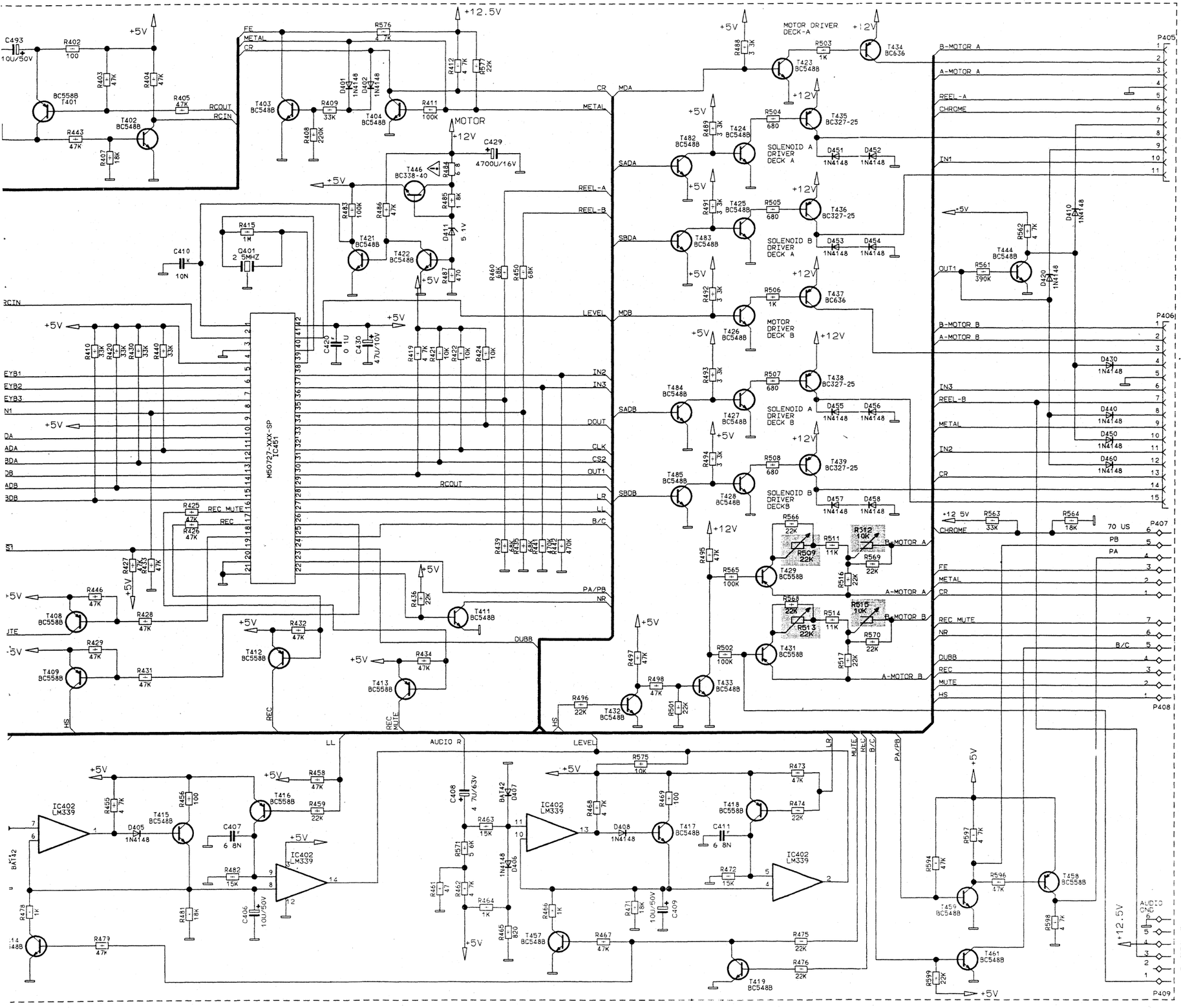
BLOCK DIAGRAM IC 104 / 105 / 106
PAGE 30

FC330

LOGIC CIRCUIT DIAGRAM



CS 33008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+12.5V
+12V
C493
10U/50V
R402
100
R403
47K
R404
47K
R405
4.7K
BC558B
T401
T402
BC548B
R443
47K
R407
18K
RCOUT
RCIN
FE
METAL
CR
R576
4.7K
T403
BC548B
R409
33K
R408
220K
D401
1N4148
D402
1N4148
T404
BC548B
R411
100K
R412
4.7K
R577
22K
MOTOR
C429
4700U/16V
T446
BC338-40
R484
6.8
R485
1.8K
D411
5.1V
R483
100K
R486
4.7K
T421
BC548B
T422
BC548B
R487
470
R415
1M
Q401
2.5MHZ
C410
10N
R460
68K
R450
68K
RCIN
R410
33K
R420
33K
R430
33K
R440
33K
C420
0.1U
C430
47U/10V
R419
4.7K
R421
10K
R422
10K
R424
10K
EYB1
EYB2
EYB3
N1
DA
ADA
BDA
DB
ADB
BDB
M50727-XXX-SP
IC451
R425
4.7K
REC MUTE
R426
4.7K
REC
R427
4.7K
R437
4.7K
R443
4.7K
R436
22K
T411
BC548B
R446
47K
T408
BC558B
R428
47K
R429
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T409
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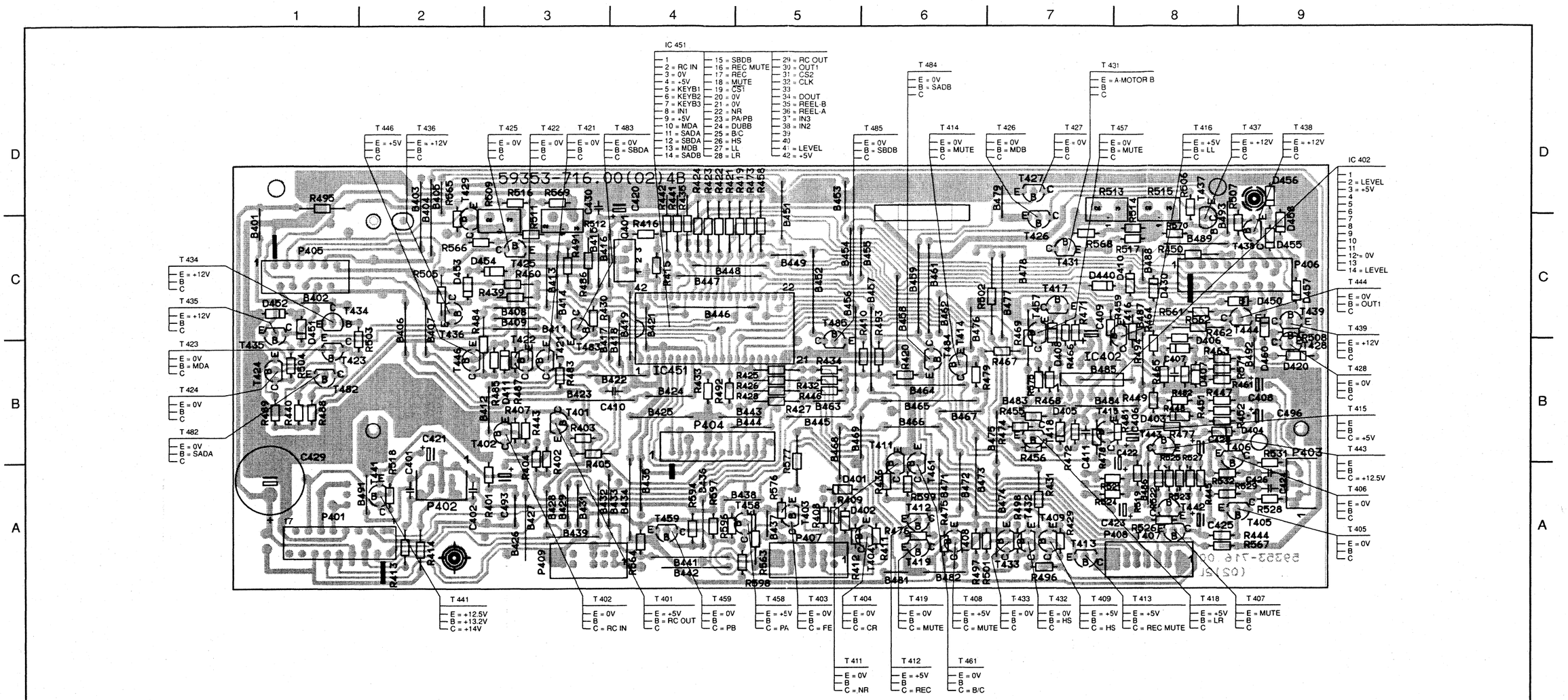
R431
47K
R432
47K
T412
BC558B
R434
47K
T413
BC558B
REC
REC MUTE
HS
DUBB
PA/PB
NR
CR
METAL
REEL-A
REEL-B
LEVEL
IN2
IN3
DOUT
CLK
CS2
OUT1
RCOUT
LR
LF
B/C
SADA
SBDA
SADB
SBDB
MDA
MDB
MOTOR DRIVER
DECK-A
+12V
R503
1K
T434
BC636
T423
BC548B
R488
3.3K
T424
BC548B
T482
BC548B
R489
3.3K
R504
680
T435
BC327-25
SOLENOID A
DRIVER
DECK A
D451
1N4148
D452
1N4148
T425
BC548B
T483
BC548B
R491
3.3K
R505
680
T436
BC327-25
SOLENOID B
DRIVER
DECK A
D453
1N4148
D454
1N4148
R492
3.3K
R506
1K
T437
BC636
MOTOR
DRIVER
DECK B
T426
BC548B
T484
BC548B
R493
3.3K
R507
680
T438
BC327-25
SOLENOID A
DRIVER
DECK B
D455
1N4148
D456
1N4148
T427
BC548B
T485
BC548B
R494
3.3K
R508
680
T439
BC327-25
SOLENOID B
DRIVER
DECKB
D457
1N4148
D458
1N4148
T428
BC548B
R495
47K
R565
100K
T429
BC558B
R496
22K
T432
BC548B
R497
47K
R498
47K
T433
BC548B
R502
100K
R501
22K
R566
22K
R509
22K
R511
11K
R512
10K
R569
22K
R516
22K
R568
22K
R513
22K
R514
11K
R515
10K
R570
22K
R517
22K
T431
BC558B
B-MOTOR A
A-MOTOR A
REEL-A
CHROME
IN1
B-MOTOR B
A-MOTOR B
IN3
REEL-B
METAL
IN2
CR
+5V
R562
4.7K
T444
BC548B
R561
390K
D430
1N4148
D410
1N4148
D430
1N4148
D440
1N4148
D450
1N4148
D460
1N4148
P405
P406
P407
P408
P409
+12.5V
R563
33K
R564
18K
70 US
PB
PA
CHROME
FE
METAL
CR
REC MUTE
NR
B/C
DUBB
REC
MUTE
HS
A-MOTOR A
A-MOTOR B
TO AUDIO
TO AUDIO
TO AUDIO
M
B
A
HALL IC
OUT
SOL A
SOL B
CR
MODE
HALF
REC-F
ME
REC-R
DRIVE MECHANISM A
TOKYO PIGEON CRD 461
DRIVE MECHANISM B
TOKYO PIGEON CRD 462
LL
AUDIO R
LEVEL
LR
MUTE
HELD
B/C
PA/PB
IC402
LM339
T416
BC558B
T415
BC548B
R455
4.7K
R456
100
R458
47K
R459
22K
D405
1N4148
C407
6.8N
R482
15K
C406
100U/50V
R478
1K
R479
47K
R481
18K
BA142
C408
4.7U/63V
R463
15K
R571
5.6K
R461
47
R462
4.7K
R464
1K
R465
820
D406
1N4148
R575
10K
R468
4.7K
R469
100
T417
BC548B
D408
1N4148
C411
6.8N
R471
18K
C409
10U/50V
R466
1K
T457
BC548B
R467
47K
R473
47K
T418
BC558B
R474
22K
R472
15K
R475
22K
R476
22K
T419
BC548B
R597
4.7K
R594
47K
R596
47K
T458
BC558B
T459
BC548B
R598
4.7K
R599
22K
T461
BC548B
+12.5V
AUDIO
POWER

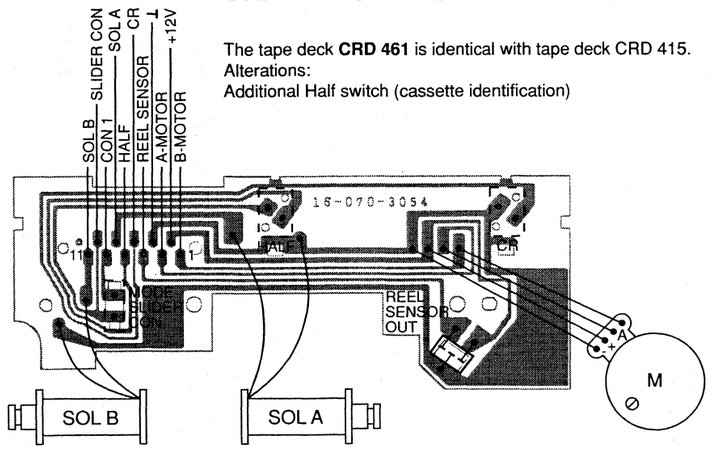
FC 330

LOGIC PANEL, DRIVE MECHANISM A PANEL, DRIVE MECHANISM B PANEL


59353-716.00(02)4B
IC 451
1
2 = RC IN
3 = 0V
4 = +5V
5 = KEYB1
6 = KEYB2
7 = KEYB3
8 = IN1
9 = +5V
10 = MDA
11 = SADA
12 = SBDA
13 = MDB
14 = SADB
15 = SBDB
16 = REC MUTE
17 = REC
18 = MUTE
19 = CS1
20 = 0V
21 = 0V
22 = NR
23 = PA/PB
24 = DUBB
25 = B/C
26 = HS
27 = LL
28 = LR
29 = RC OUT
30 = OUT1
31 = CS2
32 = CLK
33
34 = DOUT
35 = REEL-B
36 = REEL-A
37 = IN3
38 = IN2
39
40
41 = LEVEL
42 = +5V
IC 402
1
2 = LEVEL
3 = +5V
4
5
6
7
8
9
10
11
12 = 0V
13
14 = LEVEL
T 434 E = +12V B C
T 435 E = +12V B C
T 423 E = 0V B = MDA C
T 424 E = 0V B C
T 482 E = 0V B = SADA C
T 446 E = +5V B C
T 436 E = +12V B C
T 425 E = 0V B C
T 422 E = 0V B C
T 421 E = 0V B C
T 483 E = 0V B = SBDA C
T 484 E = 0V B = SADB C
T 485 E = 0V B = SBDB C
T 414 E = 0V B = MUTE C
T 426 E = 0V B = MDB C
T 427 E = 0V B C
T 457 E = 0V B = MUTE C
T 431 E = A-MOTOR B C
T 416 E = +5V B = LL C
T 437 E = +12V B C
T 438 E = +12V B C
T 444 E = 0V B = OUT1 C
T 439 E = +12V B C
T 428 E = 0V B C
T 415 E B C = +5V
T 443 E B C = +12.5V
T 406 E = 0V B C
T 405 E = 0V B C
T 441 E = +12.5V B = +13.2V C = +14V
T 402 E = 0V B C = RC IN
T 401 E = +5V B = RC OUT C
T 459 E = 0V B C = PB
T 458 E = +5V B C = PA
T 403 E = 0V B C = FE
T 404 E = 0V B C = CR
T 411 E = 0V B C = NR
T 419 E = 0V B C = MUTE
T 412 E = +5V B C = REC
T 408 E = +5V B C = MUTE
T 461 E = 0V B C = B/C
T 433 E = 0V B C
T 432 E = 0V B = HS C
T 409 E = +5V B C = HS
T 413 E = +5V B C = REC MUTE
T 418 E = +5V B = LR C
T 407 E = MUTE B C
P401
P402
P403
P404
P405
P406
P407
P408
P409

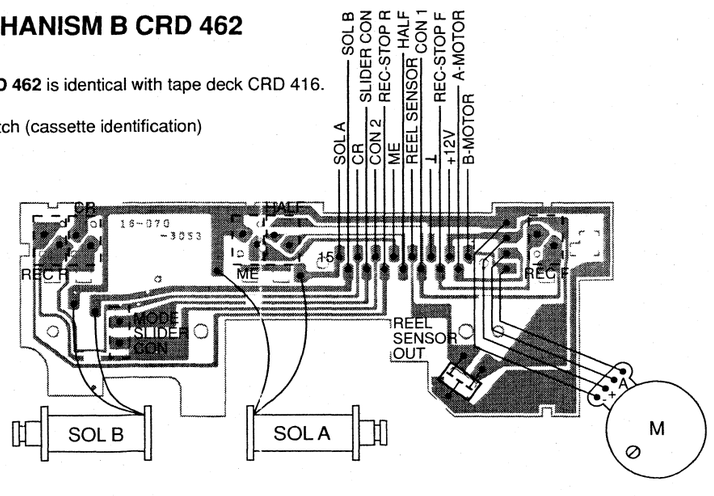
DRIVE MECHANISM A CRD 461

The tape deck **CRD 461** is identical with tape deck CRD 415.
Alterations:
Additional Half switch (cassette identification)



DRIVE MECHANISM B CRD 462

The tape deck **CRD 462** is identical with tape deck CRD 416.
Alterations:
Additional Half switch (cassette identification)

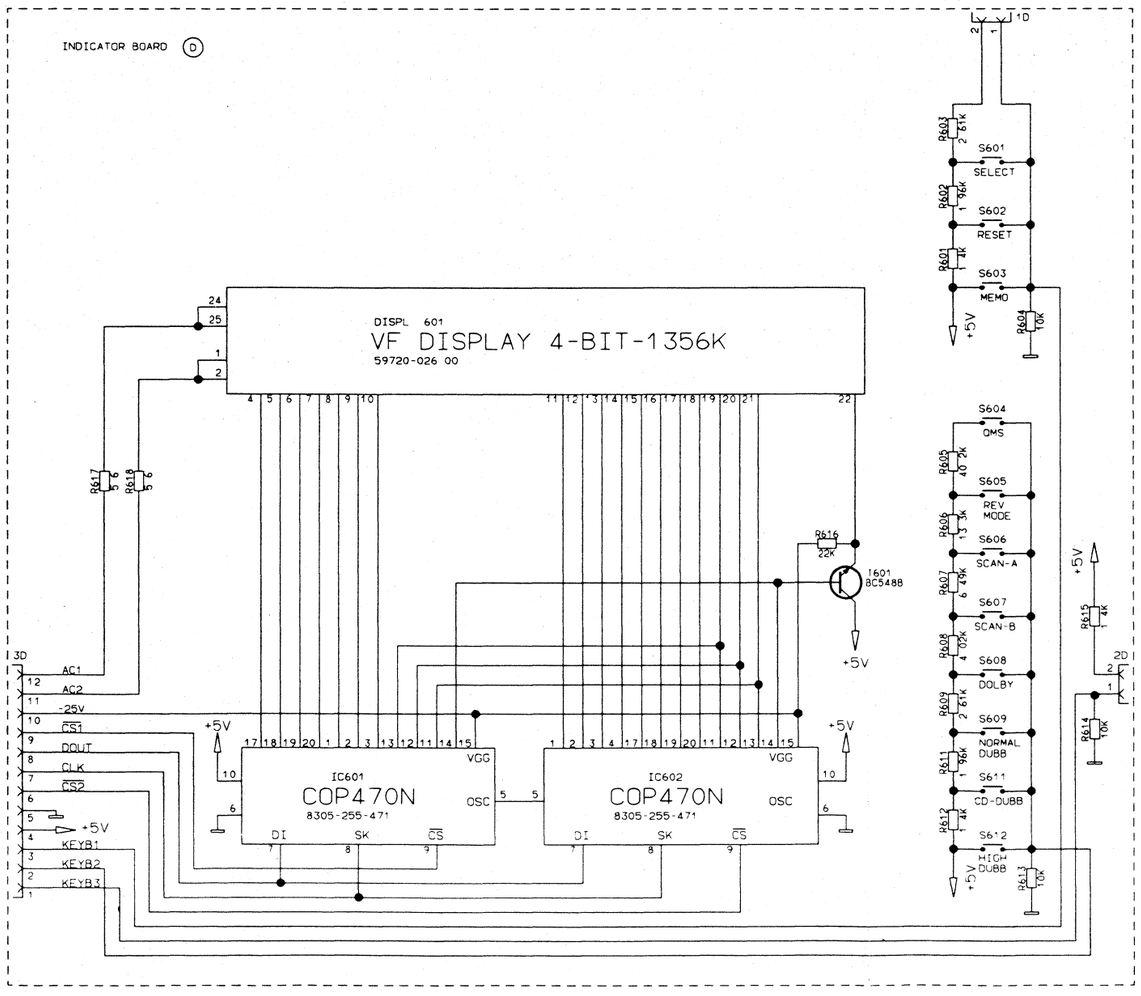


B 401 C 1
B 402 C 1
B 403 D 2
B 404 D 2
B 405 D 2
B 406 C 2
B 407 C 2
B 408 C 3
B 409 C 3
B 411 C 3
B 412 B 3
B 413 C 3
B 414 C 3
B 415 C 3
B 416 C 3
B 417 C 3
B 418 B 4
B 419 C 4
B 421 C 4
B 422 B 4
B 423 B 3
B 424 B 4
B 425 B 4
B 426 A 3
B 427 A 3
B 428 A 3
B 429 A 3
B 431 A 3
B 432 A 3
B 433 A 4
B 434 A 4
B 435 A 4
B 436 A 4
B 437 A 5
B 438 A 5
B 439 A 3
B 441 A 4
B 442 A 4
B 443 B 5
B 444 B 5
B 445 B 5
B 446 C 4
B 447 C 4
B 448 C 4
B 449 C 5
B 451 C 5
B 452 C 5
B 453 D 5
B 454 C 5
B 455 C 5
B 456 B 5
B 457 B 6
B 458 C 6
B 459 C 6
B 461 C 6
B 462 G 6
B 463 B 5
B 464 B 6
B 465 B 6
B 466 B 6
B 467 B 6
B 468 B 5
B 469 B 5
B 471 A 6
B 472 A 6
B 473 A 6
B 474 A 7
B 475 B 7
B 476 C 6
B 477 C 7
B 478 C 7
B 479 D 7
B 481 A 6
B 482 A 6
B 483 B 7
B 484 B 7
B 485 B 7
B 486 A 8
B 487 B 8
B 488 C 8
B 489 C 8
B 491 A 2
B 492 B 9
B 493 C 8
C 401 A 2
C 402 A 2
C 405 B 8
C 406 B 8
C 407 B 8
C 408 B 9
C 409 C 7
C 410 B 4
C 411 B 7
C 420 D 4
C 421 B 2
C 422 B 8
C 423 A 8
C 424 A 9
C 425 A 8
C 426 A 9
C 428 B 8
C 429 A 1
C 430 D 3
C 493 A 3
C 496 B 9
D 401 A 5
D 402 A 5
D 403 B 8
D 404 B 8
D 405 B 7
D 406 B 8
D 407 B 8
D 408 C 7
D 410 C 8
D 411 B 3
D 420 B 9
D 430 C 8
D 440 C 7
D 450 C 9
D 451 C 1
D 452 C 1
D 453 C 2
D 454 C 3
D 455 C 9
D 456 D 9
D 457 C 9
D 458 C 9
D 460 C 9
IC 402 B 7
IC 451 C 4
P 401 A 1
P 402 A 2
P 403 A 9
P 404 B 4
P 405 C 1
P 406 C 8
P 407 A 5
P 408 A 8
P 409 A 3
Q 401 C 4
R 401 A 3
R 402 B 3
R 403 B 3
R 404 B 3
R 405 B 3
R 407 B 3
R 408 A 5
R 409 A 5
R 410 B 6
R 411 A 6
R 412 A 5
R 413 A 2
R 414 A 2
R 415 C 4
R 416 C 4
R 419 C 5
R 420 B 6
R 421 C 4
R 422 C 4
R 423 C 4
R 424 C 4
R 425 B 5
R 426 B 5
R 427 B 5
R 428 B 5
R 429 A 7
R 430 C 3
R 431 A 7
R 432 B 5
R 433 B 4
R 434 B 5
R 435 C 4
R 436 A 6
R 439 C 3
R 440 B 1
R 441 C 4
R 442 C 4
R 443 B 3
R 444 A 8
R 445 A 8
R 446 B 5
R 447 B 8
R 448 B 8
R 449 B 8
R 450 C 8
R 451 B 8
R 452 B 8
R 455 B 7
R 456 B 7
R 458 C 5
R 459 C 7
R 460 C 3
R 461 B 8
R 462 C 8
R 463 B 8
R 464 B 8
R 465 B 8
R 466 C 7
R 467 C 7
R 468 B 7
R 469 C 7
R 471 C 7
R 472 B 7
R 473 C 5
R 474 B 7
R 475 A 6
R 476 A 6
R 477 B 8
R 478 B 7
R 479 B 6
R 481 B 8
R 482 B 8
R 483 B 3
R 484 B 3
R 485 B 3
R 486 C 3
R 487 B 3
R 488 B 1
R 489 B 1
R 491 C 3
R 492 B 4
R 493 B 6
R 494 C 8
R 495 D 1
R 496 A 7
R 497 A 6
R 498 A 7
R 501 A 7
R 502 C 7
R 503 C 2
R 504 B 1
R 505 C 2
R 506 D 8
R 507 C 9
R 508 C 9
R 509 C 3
R 511 C 3
R 512 C 3
R 513 D 7
R 514 C 8
R 515 D 8
R 516 D 3
R 517 C 8
R 518 A 2
R 519 A 8
R 521 A 8
R 522 A 8
R 523 A 8
R 524 A 8
R 525 A 8
R 526 A 8
R 527 A 8
R 528 A 9
R 529 A 8
R 531 B 9
R 532 A 8
R 561 C 8
R 562 C 8
R 563 A 5
R 564 A 4
R 565 C 2
R 566 C 2
R 567 A 8
R 568 C 7
R 569 D 3
R 570 C 8
R 571 B 8
R 575 B 7
R 576 A 5
R 577 B 5
R 594 A 4
R 596 A 4
R 597 A 4
R 598 A 5
R 599 A 6
T 401 B 3
T 402 B 5
T 403 A 5
T 404 A 6
T 405 B 7
T 406 B 8
T 407 A 8
T 408 A 6
T 409 A 7
T 411 B 6
T 412 A 7
T 414 B 6
T 415 B 8
T 416 C 5
T 417 B 7
T 418 B 7
T 419 B 6
T 420 B 7
T 421 B 4
T 422 B 4
T 423 B 1
T 424 B 1
T 425 C 3
T 426 C 7
T 427 D 7
T 428 B 9
T 429 C 2
T 431 C 7
T 432 A 7
T 433 A 7
T 434 C 1
T 435 C 1
T 436 C 2
T 437 C 8
T 438 C 9
T 439 C 9
T 441 A 2
T 442 A 8
T 443 B 8
T 444 C 9
T 446 B 2
T 457 C 7
T 458 A 5
T 459 A 4
T 461 B 6
T 482 B 1
T 483 C 3
T 484 B 6
T 485 C 5

CS 33009

INDICATOR + CONTROL + KEYBOARD-RECORD -DECK A -DECK B CIRCUIT DIAGRAM

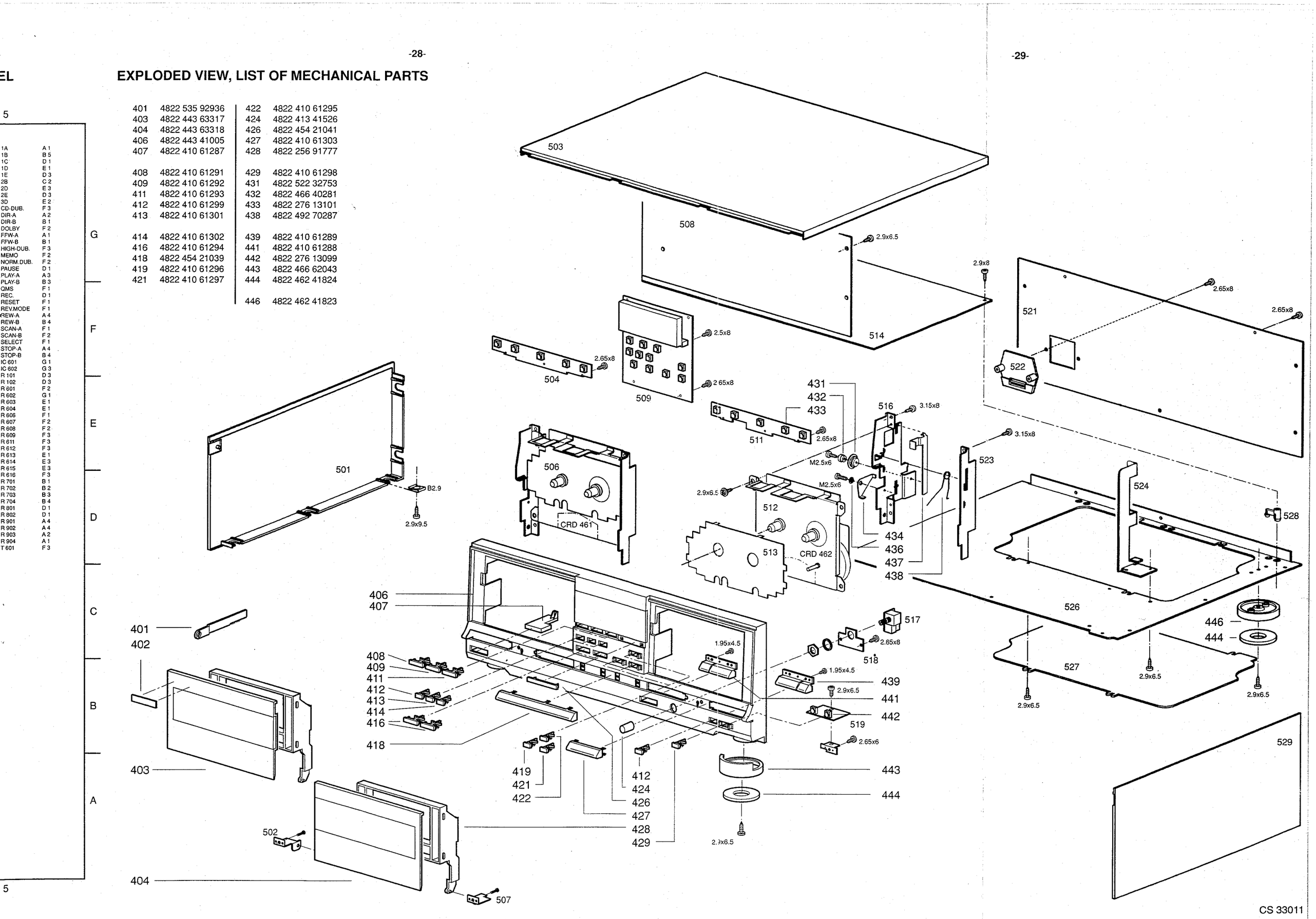
BLOCK DIAGRAM IC 601 / 602
PAGE 30



FC330

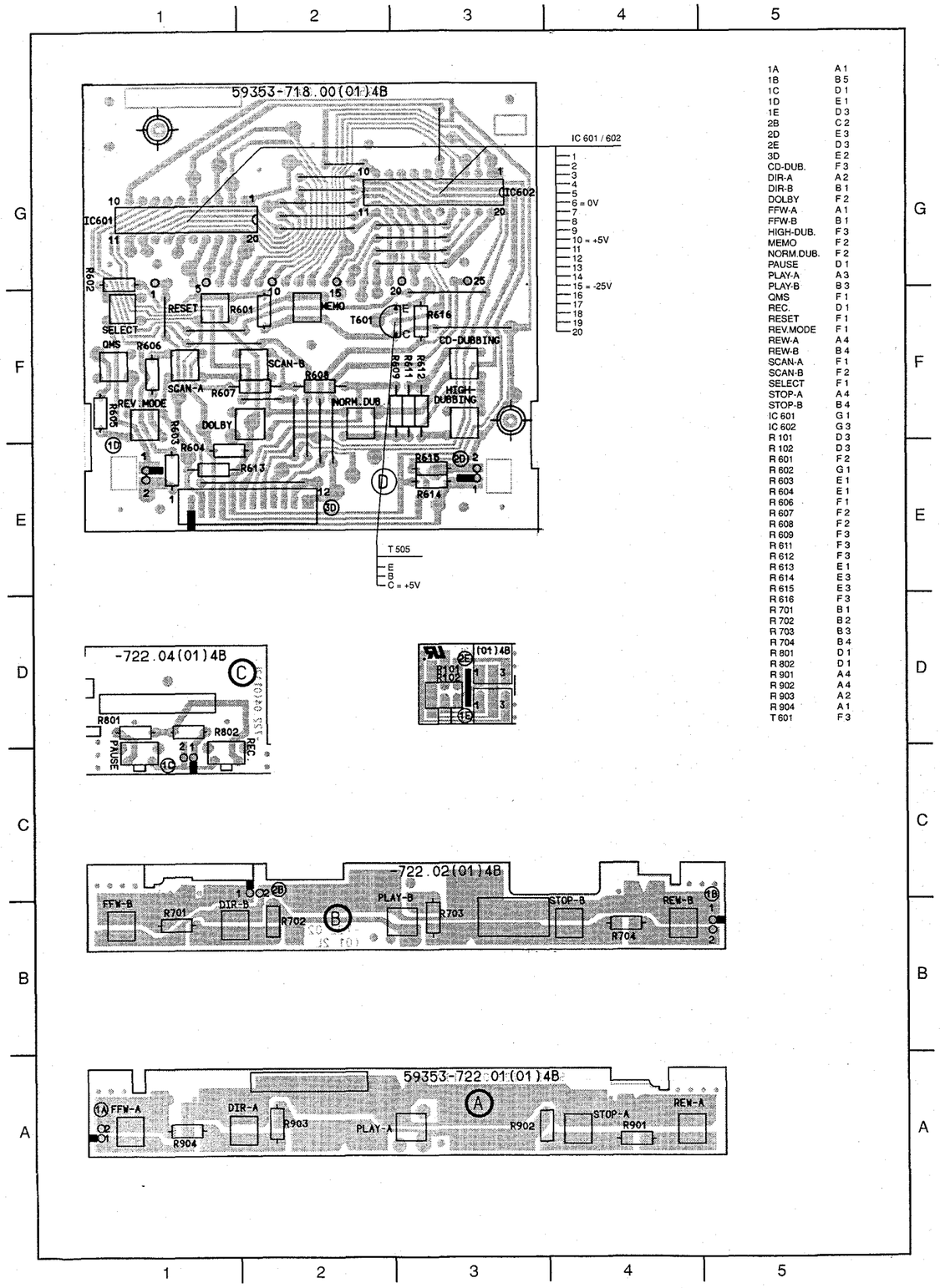
EXPLODED VIEW, LIST OF MECHANICAL PARTS

401	4822 535 92936	422	4822 410 61295
403	4822 443 63317	424	4822 413 41526
404	4822 443 63318	426	4822 454 21041
406	4822 443 41005	427	4822 410 61303
407	4822 410 61287	428	4822 256 91777
408	4822 410 61291	429	4822 410 61298
409	4822 410 61292	431	4822 522 32753
411	4822 410 61293	432	4822 466 40281
412	4822 410 61299	433	4822 276 13101
413	4822 410 61301	438	4822 492 70287
414	4822 410 61302	439	4822 410 61289
416	4822 410 61294	441	4822 410 61288
418	4822 454 21039	442	4822 276 13099
419	4822 410 61296	443	4822 466 62043
421	4822 410 61297	444	4822 462 41824
		446	4822 462 41823



CS 33011

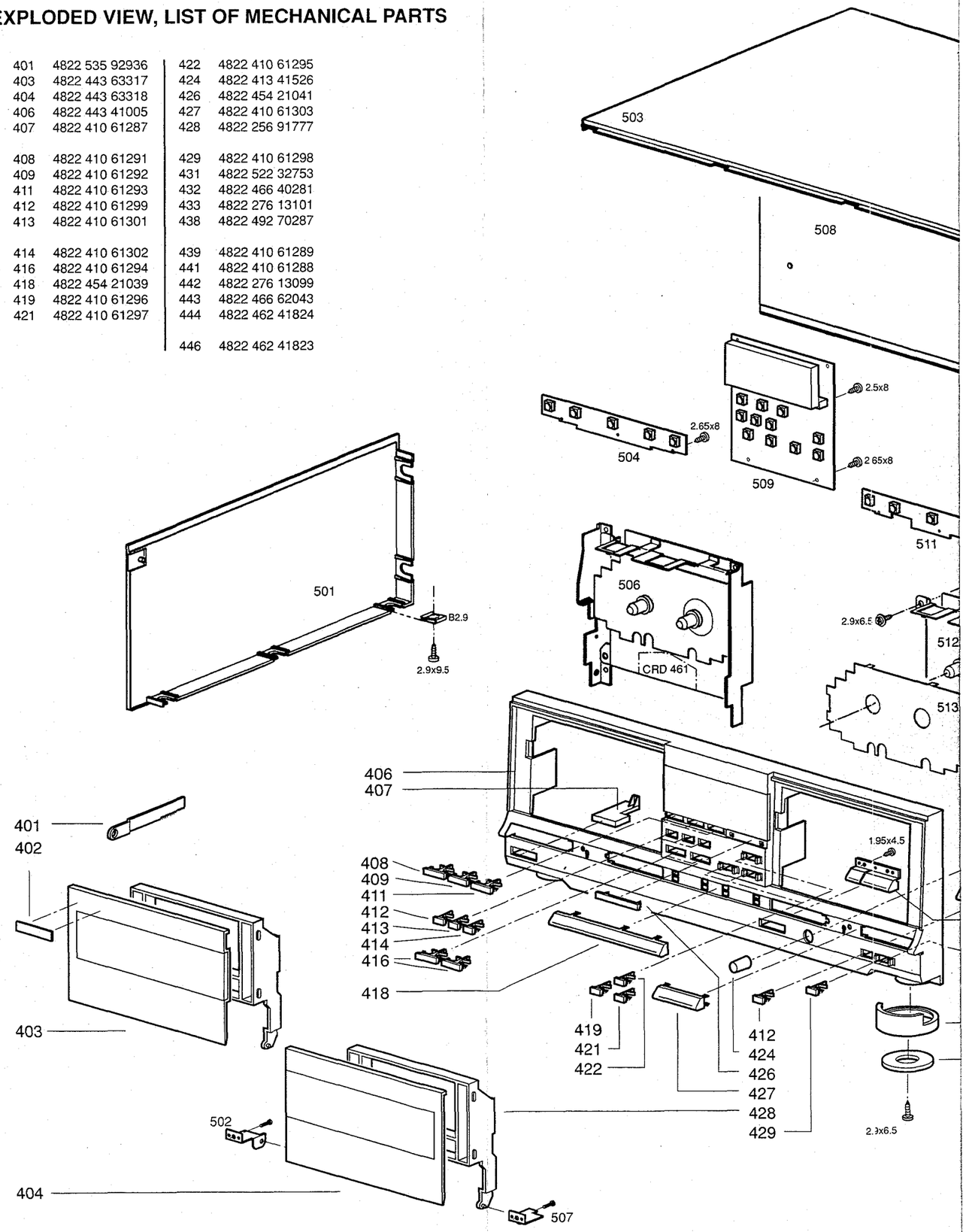
INDICATOR + CONTROL + KEYBOARD-RECORD -DECK A -DECK B PANEL



1A	A 1
1B	B 5
1C	D 1
1D	E 1
1E	D 3
2B	C 2
2D	E 3
2E	D 3
3D	E 2
CD-DUB.	F 3
DIR-A	A 2
DIR-B	B 1
DOLBY	F 2
FFW-A	A 1
FFW-B	B 1
HIGH-DUB.	F 3
MEMO	F 2
NORM.DUB.	F 2
PAUSE	D 1
PLAY-A	A 3
PLAY-B	B 3
QMS	F 1
REC.	D 1
RESET	F 1
REV.MODE	F 1
REW-A	A 4
REW-B	B 4
SCAN-A	F 1
SCAN-B	F 2
SELECT	F 1
STOP-A	A 4
STOP-B	B 4
IC 601	G 1
IC 602	G 3
R 101	D 3
R 102	D 3
R 601	F 2
R 602	G 1
R 603	E 1
R 604	E 1
R 606	F 1
R 607	F 2
R 608	F 2
R 609	F 3
R 611	F 3
R 612	F 3
R 613	E 1
R 614	E 3
R 615	E 3
R 616	F 3
R 701	B 1
R 702	B 2
R 703	B 3
R 704	B 4
R 801	D 1
R 802	D 1
R 901	A 4
R 902	A 4
R 903	A 2
R 904	A 1
T 601	F 3

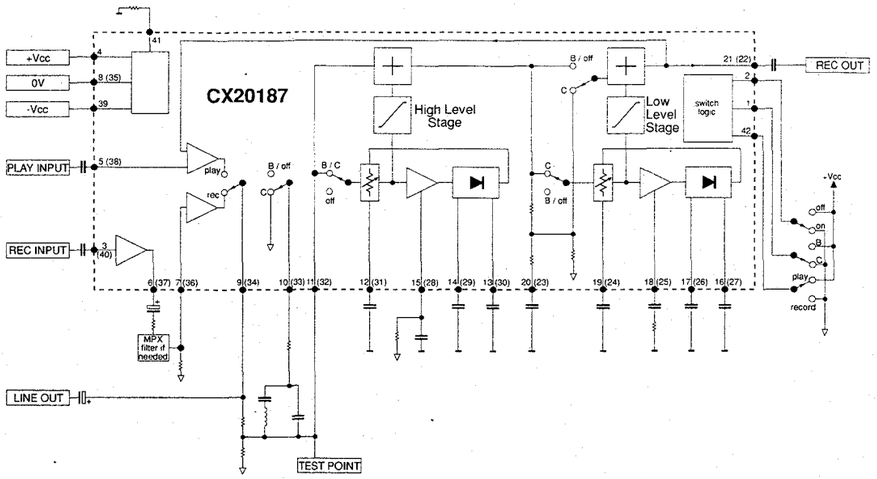
EXPLODED VIEW, LIST OF MECHANICAL PARTS

401	4822 535 92936	422	4822 410 61295
403	4822 443 63317	424	4822 413 41526
404	4822 443 63318	426	4822 454 21041
406	4822 443 41005	427	4822 410 61303
407	4822 410 61287	428	4822 256 91777
408	4822 410 61291	429	4822 410 61298
409	4822 410 61292	431	4822 522 32753
411	4822 410 61293	432	4822 466 40281
412	4822 410 61299	433	4822 276 13101
413	4822 410 61301	438	4822 492 70287
414	4822 410 61302	439	4822 410 61289
416	4822 410 61294	441	4822 410 61288
418	4822 454 21039	442	4822 276 13099
419	4822 410 61296	443	4822 466 62043
421	4822 410 61297	444	4822 462 41824
		446	4822 462 41823

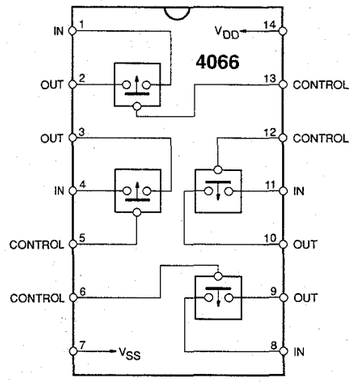


COMPONENTS

IC 104

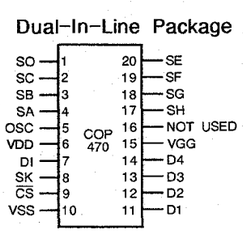


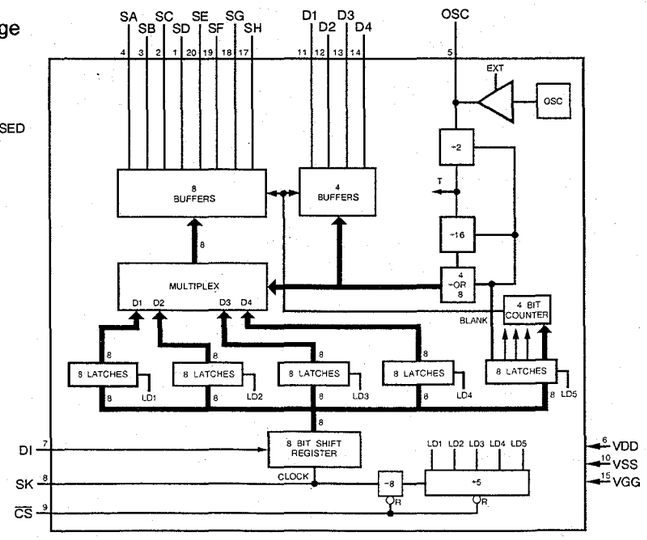
IC 101 / 102 / 103 / 105 / 106



IC 601 / 602 Connection and Block Diagram

Dual-In-Line Package





LIST OF ELECTRICAL PARTS

	5322 209 10357	4066 B/14066 B
	4822 209 73092	CX 20187
	4822 209 80631	LM339N
	4822 209 63934	M 50727-XXX
	4822 209 63935	COP 470 N
	4822 130 44196	BC 548 C
	4822 130 41096	BC 550 C
	4822 130 61755	BC 560 C
	4822 130 44568	BC 557 B
	5322 130 44779	BC 338-40
	4822 130 40981	BC 337-25
	4822 130 44197	BC 558 B
	4822 130 40937	BC 548 B
	4822 130 44283	BC 636
	4822 130 41246	BC 327-25
	4822 130 44461	BC 546 B
	4822 130 30621	DIODE 1N4148
	4822 130 31353	DIODE BAT 42
	4822 130 81005	Z DIODE 5,1 C00,5W
L101	4822 157 60203	DR -GR 4,7MH
L102	4822 157 60203	DR -GR 4,7MH
L103	4822 157 60198	OSCILLATOR-COIL
L104	4822 157 60202	DR AX00411 4,7MH
L105	4822 157 60202	DR AX00411 4,7MH
F101	4822 242 72602	FILTER KM 10 DF
F102	4822 242 72602	FILTER KM 10 DF
F103	4822 242 72603	FILTER FB 7 SG
F104	4822 242 72603	FILTER FB 7 SG
Q401	4822 242 80256	KER.RES.76CST 2,5 MG
C145	4822 125 50415	TR.17 15/100PF VCT56
C148	4822 125 50415	TR.17 15/100PF VCT56
C150	4822 124 42188	ELCO CB 100UF 25V
C156	4822 124 42187	ELCO CB 220UF 16V
C179	4822 124 42187	ELCO CB 220UF 16V
C182	4822 124 42186	ELCO GRP 100UF 10V
C184	4822 124 42186	ELCO GRP 100UF 10V
C237	4822 124 42187	ELCO CB 220UF 16V
C406	4822 124 40248	ELCO GRP 10UF 50V
C408	4822 124 40246	ELCO GRP 4,7UF 63V
C409	4822 124 40248	ELCO GRP 10UF 50V
C421	4822 124 42188	ELCO GRP 100UF 25V
C422	4822 124 40248	ELCO GRP 10UF 50V
C423	4822 124 40248	ELCO GRP 10UF 50V
C429	4822 124 23506	ELCO CB 4700UF 16V
C430	4822 124 42185	ELCO GRP 47UF 10V
C493	4822 124 40248	ELCO GRP 10UF 50V
C496	4822 124 40246	ELCO GRP 4,7UF 63V

R168	4822 100 11739	ESTR.SK10-A22KOHMLIN
R169	4822 100 11739	ESTR.SK10-A22KOHMLIN
R172	4822 100 11739	ESTR.SK10-A22KOHMLIN
R184	4822 100 11739	ESTR.SK10-A22KOHMLIN
R199	4822 116 81859	KSWSIB22 OHM 5%-GA
R225	4822 100 11739	ESTR.SK10-A22KOHMLIN
R226	4822 100 11739	ESTR.SK10-A22KOHMLIN
R248	4822 116 81859	KSWSIB22 OHM 5%-GA
R301	4822 102 10426	POTIOMETER
R302	4822 102 10426	POTIOMETER
R352	4822 116 81858	KSWSIB10 OHM 5%-GA
R484	4822 116 83009	KSWSIB6,8OHM 5%-GA
R509	4822 100 11527	ESTR.PP10 22 KOHM
R511	4822 116 83008	KSWAX0204-GA11KOHM
R512	4822 100 11071	ESTR.PP10 10 KOHM
R513	4822 100 11527	ESTR.PP10 22 KOHM
R514	4822 116 83008	KSWAX0204-GA11KOHM
R515	4822 100 11071	ESTR.PP10 10 KOHM
R601	4822 116 83011	MSWAX0204-GA1,4KOHM
R602	4822 116 83012	MSWAX0204-GA1,96KOHM
R603	4822 116 83013	MSWAX0204-GA2,61KOHM
R605	4822 116 83017	MSWAX0204-GA40,2KOHM
R606	4822 116 83016	MSWAX0204-GA13,3KOHM
R607	4822 116 83015	MSWAX0204-GA6,49KOHM
R608	4822 116 83014	MSWAX0204-GA4,02KOHM
R609	4822 116 83013	MSWAX0204-GA2,61KOHM
R611	4822 116 83012	MSWAX0204-GA1,96KOHM
R612	4822 116 83011	MSWAX0204-GA1,4KOHM
R615	4822 116 83011	MSWAX0204-GA1,4KOHM
R701	4822 116 83015	MSWAX0204-GA6,49KOHM
R702	4822 116 83014	MSWAX0204-GA4,02KOHM
R703	4822 116 83013	MSWAX0204-GA2,61KOHM
R704	4822 116 83012	MSWAX0204-GA1,96KOHM
R801	4822 116 83017	MSWAX0204-GA40,2KOHM
R802	4822 116 83016	MSWAX0204-GA13,3KOHM
R901	4822 116 83017	MSWAX0204-GA40,2KOHM
R902	4822 116 83016	MSWAX0204-GA13,3KOHM
R903	4822 116 83015	MSWAX0204-GA6,49KOHM
R904	4822 116 83014	MSWAX0204-GA4,02KOHM

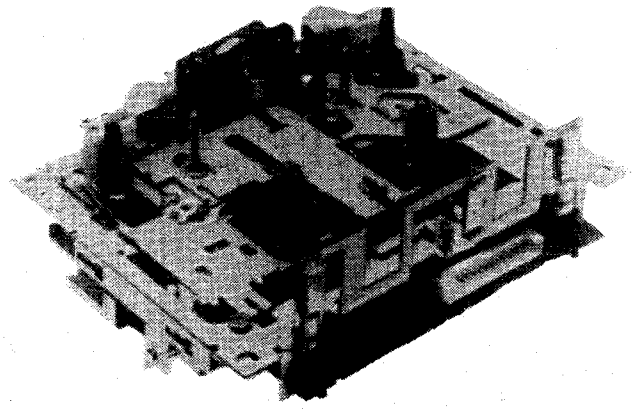
MISCELLANEOUS

931	4822 691 20667	TAPE DRIVE CRD 461
932	4822 691 20668	TAPE DRIVE CRD 462
DP601	4822 130 90989	FTD

4338

Recorders tape deck CRD 461/462

Service
Service
Service



Service Manual

(GB)

The tape deck **CRD 461** is identical with tape deck CRD 415.
Alterations:
Additional Half switch (cassette identification)
Code No. 4822 278 90611.
Circuit changes, see Fig. 1.

The tape deck **CRD 462** is identical with tape deck CRD 416.
Alterations:
Additional Half switch (cassette identification)
Code No. 4822 278 90611.
Circuit changes, see Fig. 2.

For parts and specifications, see Service Manual: Recorder Tape Deck CFE/CRD (Code No. 4822 725 22437).

(F)

La mécanique **CRD 461** est identique à celle du CRD 415.
Modification:
demi-commutateur à glissière supplémentaire (caractéristique de charge-cassette) numéro de code 4822 278 90611.
Modification de commutation voir figure 1.

La mécanique **CRD 462** est identique à celle du CRD 416.
Modification:
demi-commutateur à glissière supplémentaire (caractéristique de charge-cassette) numéro de code 4822 278 90611.
Modification de commutation voir figure 2.

Pour les modules et les informations techniques, voir l'instruction de service des platines cassettes enregistrement CFE/CRD (numéro de code 4822 725 22437).

(NL)

Het loopwerk **CRD 461** is gelijk aan loopwerk CRD 415 met uitzondering van:
"HALF" schakelaar (cassette identificatie).
Codenummer 4822 278 90611.
Voor het gewijzigde circuit zie fig.1.

Het loopwerk **CRD 462** is gelijk aan loopwerk CRD 416 met uitzondering van:
"HALF" schakelaar (cassette identificatie).
Codenummer 4822 278 90611.
Voor het gewijzigde circuit zie fig.1.

Voor reparatie gegevens zie service manual Recorders tape deck CFE/CRD. (4822 725 22437)

(D)

Das Laufwerk **CRD 461** ist dem Laufwerk CRD 415 gleich.
Änderung:
Zusätzlicher Half-Schalter (Cassetten-Ladekennung)
Kodenummer 4822 278 90611.
Schaltungsänderung siehe Fig. 1.

Das Laufwerk **CRD 462** ist dem Laufwerk CRD 416 gleich.
Änderung:
Zusätzlicher Half-Schalter (Cassetten-Ladekennung)
Kodenummer 4822 278 90611.
Schaltungsänderung siehe Fig. 2.

Für Bauteile und Technische Daten siehe das Service Manual Recorder tape deck CFE/CRD (Kodenummer 4822 725 22437).

+4013 1/2 1/6/6

(I)

La meccanica **CRD 461** è uguale alla CRD 415.
Modifica:
Aggiunto un commutatore (identificazione carica cassetta)
Codice 4822 278 90611.
Per la modifica circuitale vedere fig. 1.

La meccanica **CRD 462** è uguale alla CRD 416.
Modifica:
Aggiunto un commutatore (identificazione carica cassetta)
Codice 4822 278 90611.
Per la modifica circuitale vedere fig. 2.

Componenti e dati tecnici sono riportati nel manuale tecnico del Recorder Tape Deck CFE/CRD (codice 4822 725 22437).

Documentation Technique Service Dokumentation Documentazione di Servizio Huolto-Ohje Manual de Servicio Manual de Servicio

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"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

Subject to modification

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Fig. 1. CRD 461

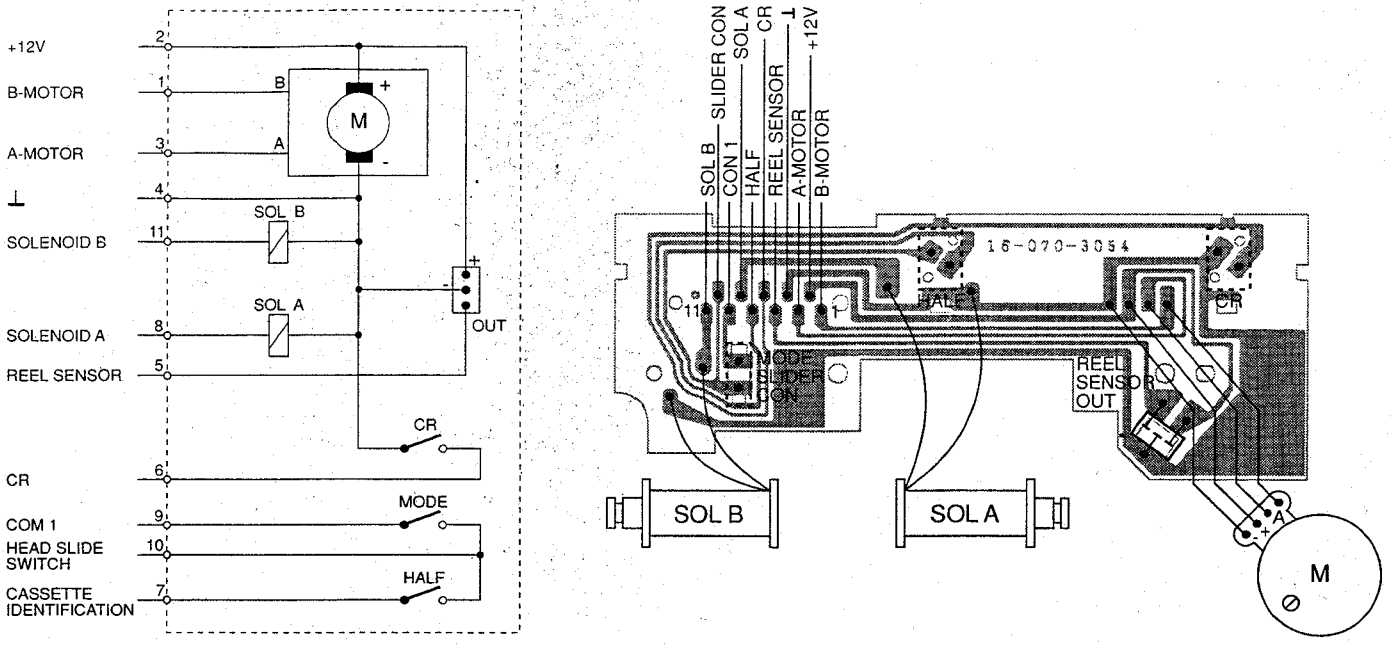
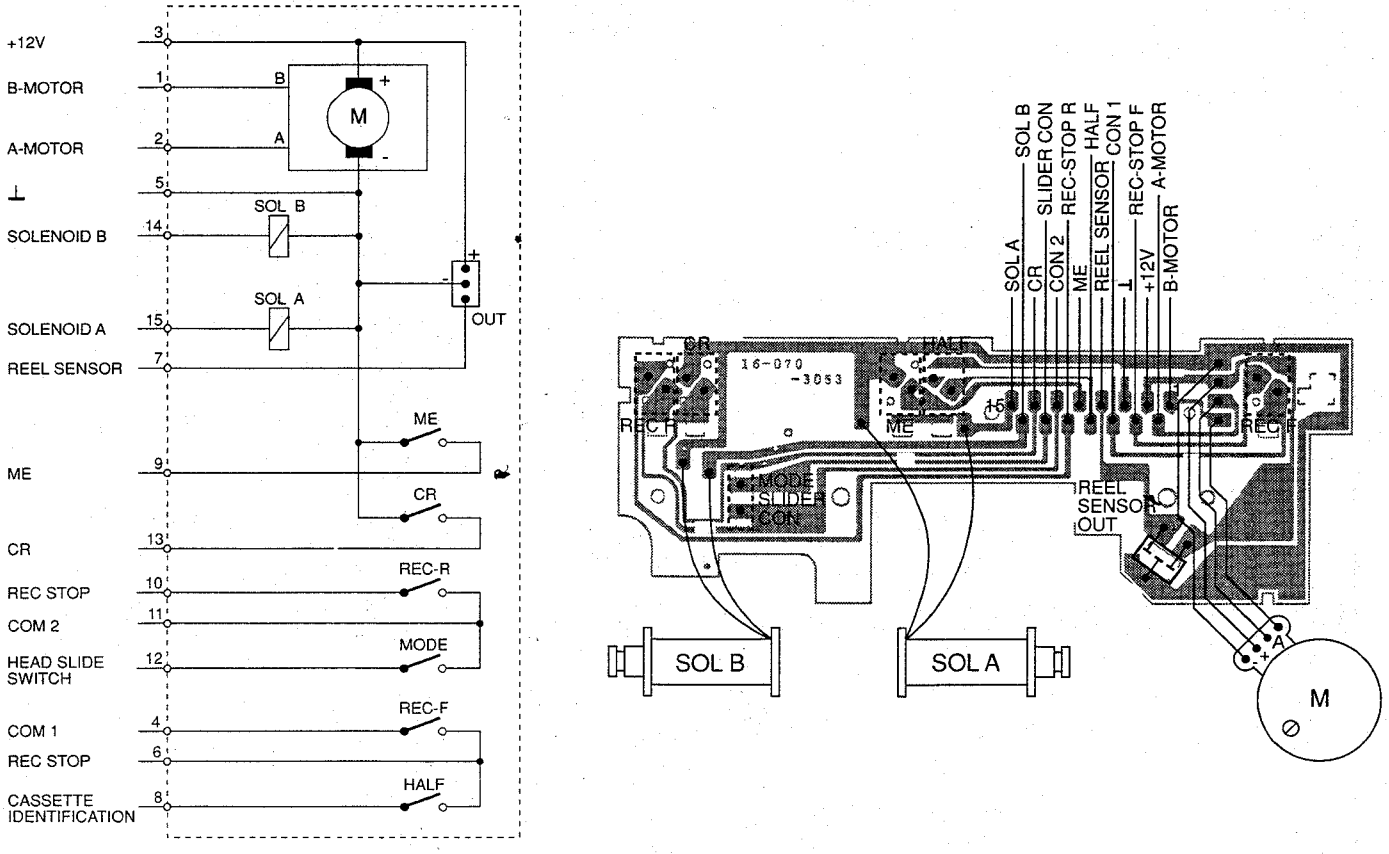


Fig. 2. CRD 462



GB Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

F Les normes de sècurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spècifiées.

NL Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

D Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Orginalzustand des Geräts darf nicht verändert werden für Reparaturen sind Orginal-Ersatzteile zu verwenden.

I Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.